PEB-6630/6631VLA

Embedded System Board

User's Manual

P/N: AB1-103/AB1-104 Version 1.0

Copyright © Portwell, Inc., 2002. All rights reserved.
All other brand names are registered trademarks of their respective owners.

Table of Contents

How to Use This Manual
CHAPTER 1 Introduction 1-1
1.1 Check List 1-2
1.2 Product Specifications 1-3
1.3 System Architecture 1-6

CHAPTER 2 Hardware Configuration Setting 2-1
2.1 Jumpers Position and Setting Table 2-2
2.2 Connectors 2-3

CHAPTER 3 System Installation 3-1
3.1 Low Voltage Intel Celeron/Pentium-III Processor 3-1
3.2 Main Memory 3-1
3.3 Installing the Single Board Computer 3-2
3.3.1 INF Chipset Component Driver 3-2
3.3.2 Intel 82815 GMCH Graphics Controller 3-3
3.3.3 Intel 82801BA MAC Fast Ethernet Controller 3-4
3.3.4 Intel 82801BA AC'97 Codec Controller 3-4
3.4 Clear CMOS Operation 3-5
3.5 Watch Dog Timer Programming 3-5

CHAPTER 4 BIOS Setup Information 4-1
4.1 Entering Setup 4-1
4.2 Main Menu 4-3
4.3 Standard CMOS Setup Menu 4-4
4.4 IDE Adaptors Setup Menu 4-6
4.5 Advanced BIOS Features 4-8
4.6 Advanced Chipset Features 4-11
4.7 Integrated Peripherals 4-14
4.8 Onboard FDC Controller 4-16
4.9 Onboard Serial Port 1/Port 2 4-16
4.10 UART Mode Select 4-17
4.11 Power Management Setup 4-19
4.12 PnP/PCI Configuration Setup 4-23
4.13 PC Health Status 4-25
4.14 Frequency/Voltage Control 4-25
4.15 Default Menu 4-26
4.16 Supervisor/User Password Setting 4-27
4.17 Exiting Selecting 4-28
4.18 POST Messages 4-28
4.19 BIOS POST Check Point List 4-34
4.20 Flash BIOS Utility 4-40

CHAPTER 5 Troubleshooting 5-1
5.1 Backplane Setup 5-1
5.2 Onboard hardware installation 5-5
5.3 BIOS Setting 5-6
5.4 OS Diagnostics 5-8

How to Use This Manual

The manual describes how to configure your PEB-6630/6631VLA system to meet various operating requirements. It is divided into four chapters, with each chapter addressing a basic concept and operation of Embedded Board Computer.

Chapter 1: Introduction. This chapter presents what you have in the inside of box and give you an overview of the product specifications and basic system architecture for this model of single board computer.

Chapter 2: Hardware Configuration Setting. This chapter shows the definitions and locations of Jumpers and Connectors that you can easily configure your system

Chapter 3: System Installation. This chapter describes how to properly mount the CPU and main memory, M-system Flash disk, or optional flat panel display interface module to get a safe installation and give you a programming guide of Watch Dog Timer function. Besides, it will introduce and show you the driver installation procedure about Graphics Controller.

Chapter 4: BIOS Setup Information. This chapter specifies the meaning of each setup parameters and how to get advanced BIOS performance and update new BIOS. In addition, POST checkpoint list will give you a guide of trouble-shooting.

The content of this manual and EC declaration document is subject to change without prior notice. These changes will be incorporated in new editions of the document. **Portwell** may make supplement or change in the products described in this document at any time.

Updates to this manual, technical clarification, and answers to frequently asked questions will be shown on the following web site: http://www.portwell.com.tw

EC Declaration of Conformity

(To Be Added)

For the following equipment:
Product Name:

Model Name:

Trade Name:

is herewith confirmed to comply with the requirements set out in the Council Directive on the Approximation of the Laws of the Member States relating to Electromagnetic Compatibility Directive (89/336/EEC). The equipment was evaluated and passed the test, the following standards were applied :

EMC :	EN 55022	(1994/A1:1995 Class A)
	EN 50082-2	(1991)
	EN 61000-4-2	(1995)
	EN 61000-4-3	(1996)
	EN 61000-4-4	(1995)
	EN 61000-3-2	(1995)
	EN 61000-3-3	(1995)

The following manufacturer is responsible for this declaration :
Portwell, Inc.
(Company Name)

3F, No.88, Sec. 1, Nei-Hu Rd., Taipei, Taiwan, R.O.C.
(Company Address)

Taipei, R.O.C. _____ _____ _____
Place Date Legal Signature of Authorized Person

CHAPTER 1
Introduction

The PEB-6630VLA and PEB-6631VLA all-in-one half size single board computer is designed to fit a low power consumption Celeron/Pentium-III based CPU and compatible for high-end computer system with PCI Local Bus architecture. It is made to meet today's demanding pace, and keep complete compatibility with hardware and software designed for the IBM PC/AT. It's beneficial to build up a low power system for VARs, or system integrators. The on-board 3D Graphics display, fast Ethernet interface and AC'97 controller will bring full functionality and high performance to all segments of the PC market.

This single board computer runs with Intel Low Voltage Celeron (PEB-6630VLA) and Low Voltage Pentium-III (PEB-6631VLA) processor, and support one DIMM up to 512 MB SDRAM. The enhanced on-board PCI IDE interface support2 drives up to PIO mode 4 timing and Ultra DMA/33/66/100 synchronous mode feature. The on-board Super I/O Chipset integrates one floppy controller, two serial ports (one RS-232 and one RS-485), one keyboard controller, one hardware monitor, one IrDA port and one parallel port. Two high performance 16C550-compatible UARTs provide 16-byte transmit/receive FIFOs, and the multi-mode parallel port supports SPP/EPP/ECP function. Besides, one USB (Universal Serial Bus) ports provide high-speed data communication between peripherals and PC.

PEB-6630/6631VLA works with multi-slots PCI-bus backplane. The Watch-Dog Timer function monitors your system status. One 6-pin Mini-DIN connector (with Y-Cable) is to connect PS/2 Mouse and Keyboard. The on-board Flash ROM makes the BIOS update easier. A standard 5-1/4" drive power connector directly gets more power energy for large power applications or used for stand-alone operation, and the additional 5-pin shrouded header connects the keyboard interface on the backplane. The high precision Real Time Clock/calendar supports Y2K for accurate scheduling and stores date information. One 4-pin header is designed to support ATX power function. All of these features make PEB-6630/6631VLA excellent in stand-alone applications.

1.1 Check List

The PEB-6630/6631VLA package should cover the following basic items accompany with this manual.

- One PEB-6630VLA or PEB-6631VLA single board computer
- One Parallel port cable kit
- One serial port cable to support two interfaces
- One FDC cable
- One IDE cable
- One Y-Cable cable for PS/2 Keyboard and Mouse
- One 5-pin to 5-pin keyboard cable for backplane connection
- One 4-pin ATX power control cable for backplane connection
- One Installation Resources CD-Title to support Intel 82815 GMCH VGA display and 82801BA MAC 10/100Base-T fast Ethernet driver

If any of these items is damaged or missing, please contact your vendor and keep all packing materials for future replacement and maintenance.

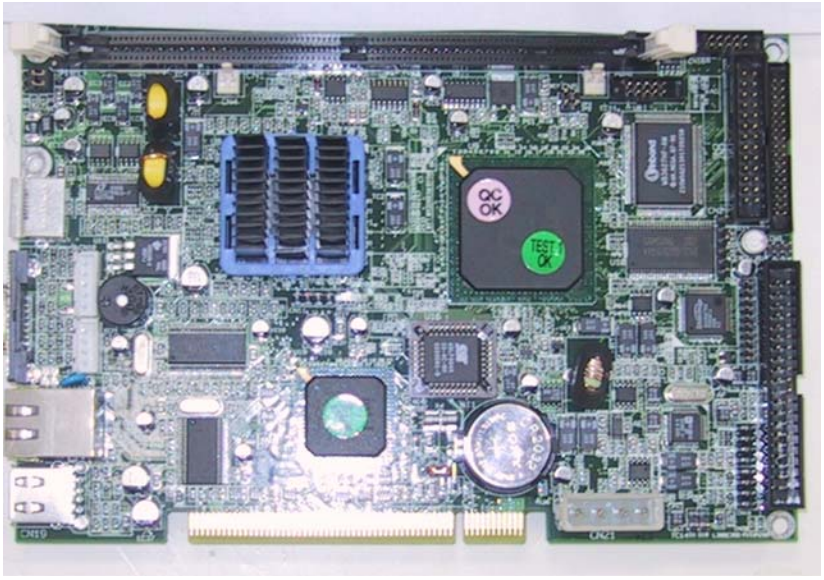


Figure 1-1 PEB-6630/6631VLA Component Side View

1.2 Product Specifications

- **Main processor**
  Intel Low Voltage Celeron or Pentium-III processors
  - Intel Low Voltage Celeron 400Mhz (PEB-6630VLA)
  - Intel Low Voltage Pentium III 700Mhz (PEB-6631VLA)
  - CPU bus frequency: 100 MHz
  - BGA2 CPU

- **BIOS**
  Phoenix (Award) system BIOS with 4MB Firmware Hub to support DMI, PnP, APM, and ACPI

- **Main Memory**
  One 168-pin DIMM sockets, supporting PC133/PC100 SDRAM up to 512MB (No ECC and Registered DIMM Support)

- **L2 Cache Memory**
  128KB L2 Cache built in Celeron and 256KB in Pentium-III processor

- **Chipset**
  Intel 815E Chipset

- **Bus Interface**
  Follow PCI 2.1 standard (32-bit PCI)
  Fully complies with PCI Local Bus specification V2.1 (support 4 master PCI slots)

- **PCI IDE Interface**
  Support one enhanced IDE ports up to two HDD devices with PIO mode 4 and Ultra DMA/33/66/100 mode transfer and Bus Master feature

- **CF Socket Interface**
  Support one enhanced IDE interface to one CF socket for CF flash disk device

- **Floppy Drive Interface**
  Support one FDD port up to two floppy drives and 5-1/4"(360K, 1.2MB), 3-1/2" (720K, 1.2MB, 1.44MB, 2.88MB) diskette format and 3-mode FDD

- **Serial Ports**
  Support two high-speed 16C550 compatible UARTs with 16-byte T/R FIFOs, one RS-232 (COM 1) and one RS-485 (COM 2)

- **IR Interface**
  Support one 6-pin header for serial Standard Infrared wireless communication

- **Parallel Port**
  Support one parallel port with SPP, EPP and ECP modes

- **USB Interface**
  Support one USB (Universal Serial Bus) ports for high speed I/O peripheral devices

- **PS/2 Mouse and Keyboard Interface**
  Support one 6-pin Mini-DIN connector and one 5-pin shrouded connector for PS/2 mouse/keyboard connection through Y-Cable and backplane connection

- **ATX Power Control Interface**
  One 4-pin header to support ATX power control with Modem Ring-On and Wake-On-LAN function

- **Auxiliary I/O Interfaces**
  System reset switch, external speaker, Keyboard lock and HDD active LED

- **Real Time Clock/Calendar (RTC)**
  Support Y2K Real Time Clock/calendar with battery backup for 7-year data retention

- **Watchdog Timer**
  Support 255 intervals from 0.5 sec./min. to 254.5 sec./min. by software programming

- **On-board VGA/Panel Interface**
  Intel 82815 GMCH integrated graphics controller with 4MB memory support CRT and Panel display with TMDS interface

- **On-board Ethernet LAN**
  Support one Intel 82801BA ICH2 integrated LAN controller to support RJ-45 interface at 10/100 Base-T speed

- **On-board AC'97 Controller**
  Integrated AC'97 Codec that provides connectors for MIC/Line-In/Line-Out

- **External Power Connector**
  Support one standard 5-1/4" disk drive power connectors to enhance power driving

- **Power Good**
  On-board power good generator with reset time, 300ms ~ 500ms

- **CPU/System Cooling Fan**
  Support two 2-pin headers with wafer

- **System Monitoring Feature**
  Monitor CPU and system temperature, operating voltage, and fan status

- **Bracket**
  Support one Mini-DIN, one VGA, one Ethernet port and one USB port

- **Physical and Environmental Requirements**
  - Outline Dimension (L X W): 185mm X 122mm
  - PCB layout: 8 layer
  - Power Requirements: +5V @7A (typ.), +12V @200mA, -12V @20mA
  - Operating Temperature: 0°C ~ 55°C
  - Storage Temperature: -20°C ~ 75°C
  - Relative Humidity : 5% ～ 90%, non-condensing

1.3 System Architecture

The following illustration of block diagram will show you how PEB-6630/6631VLA gives you a highly integrated system solution. The most up-to-date system architecture of PEB-6630/6631VLA includes two main VLSI chips, 82815 GMCH (Graphics and Memory Controller Hub) and 82801BA ICH2 (I/O Controller Hub), to support Celeron/Pentium-III processor, SDRAM, 3D graphic display, PCI bus interface, APM, ACPI compliant power management, USB ports, SMBus communication, and Ultra DMA/33/66/100 IDE Master. The on-board super I/O chip, W83627HF, will support PS/2 Keyboard/Mouse, two UARTs, FDC, Hardware Monitor, Parallel, Watch Dog Timer and Infrared interface. Besides, the on-board LAN device will give user more flexibility and reliability of application in a highly-integrated environment.

The on board low power processor support high availability and reliability, and stable operation in general industry application.

The 82815 Hub provides an integration of memory controller and graphics capability (AGP). This delivers AGP class graphics performance to PCs at reduced cost. It dynamically allocates and de-allocates system memory for complex 3D textures, preserving the benefits of standard AGP add-in solutions. Its 64-bit AGTL+ based host bus interface, optimized 64-bit DRAM interface supports one 3.3V DIMM at the maximum bus frequency of 100 MHz. The 32-bit PCI bus interface supports 4 PCI masters for external backplane support.

The 82801BA Hub employs the Accelerated Controller Hub architecture, which makes a direct connection from the graphics and memory to IDE controllers. It supports 2-channel dedicated Ultra DMA-33/66/100 IDE master interfaces (one for two IDE Storage devices and one for CF type I memory device), full Plug-and-Play compatibility, APIC (Advanced Programmable Interrupt Controller) interface, and internal real-time clock (RTC) to maintain time and date of a system. It also supports one USB port (Universal Serial Bus feature) and PCI 2.1 Compliance operation. It fully supports Operating System Directed Power Management via the Advanced Configuration and Power Interface (ACPI) specification. In addition, it is also linked via Firmware Hub Link bus to 82802AB Firmware Hub to support BIOS read/write access.

The Super I/O chip W83627HF integrates two high-speed serial ports, one parallel port, SIR interface, Watch Dog Timer (WDT) which is enabled by jumper setting and triggered by software, H/W monitoring, FDD interface and 8042 keyboard controller with PS/2 mouse ports. This parallel port supports one PC-compatible printer port (SPP, bi-direction), Enhanced Parallel Port (EPP) and Extended Capabilities Port (ECP).

Besides, an advanced feature is used on PEB-6630/6631VLA to support detecting and monitoring of system temperature, operating voltage and fan status.

The 82802 Firmware Hub stores system BIOS and video BIOS, eliminating a redundant, nonvolatile memory component.

The on-board Fast Ethernet function via RJ-45 port, and the on-board Audio Codec controller with Line-In/Line-Out connectors are to support full functionality of PEB-6630/6631VLA AIO SBC (All-In-One Single Board Computer).

The graphic device is the 815E built-in Graphics Controller to support high end of graphics accelerator. It is implemented by high performance SDRAM 4MB to support color depths and high resolution up to 1600 x 1200 with 256 colors.

All of details of operating relations are shown in Figure 1-2 PEB-6630/6631VLA System Block Diagram.

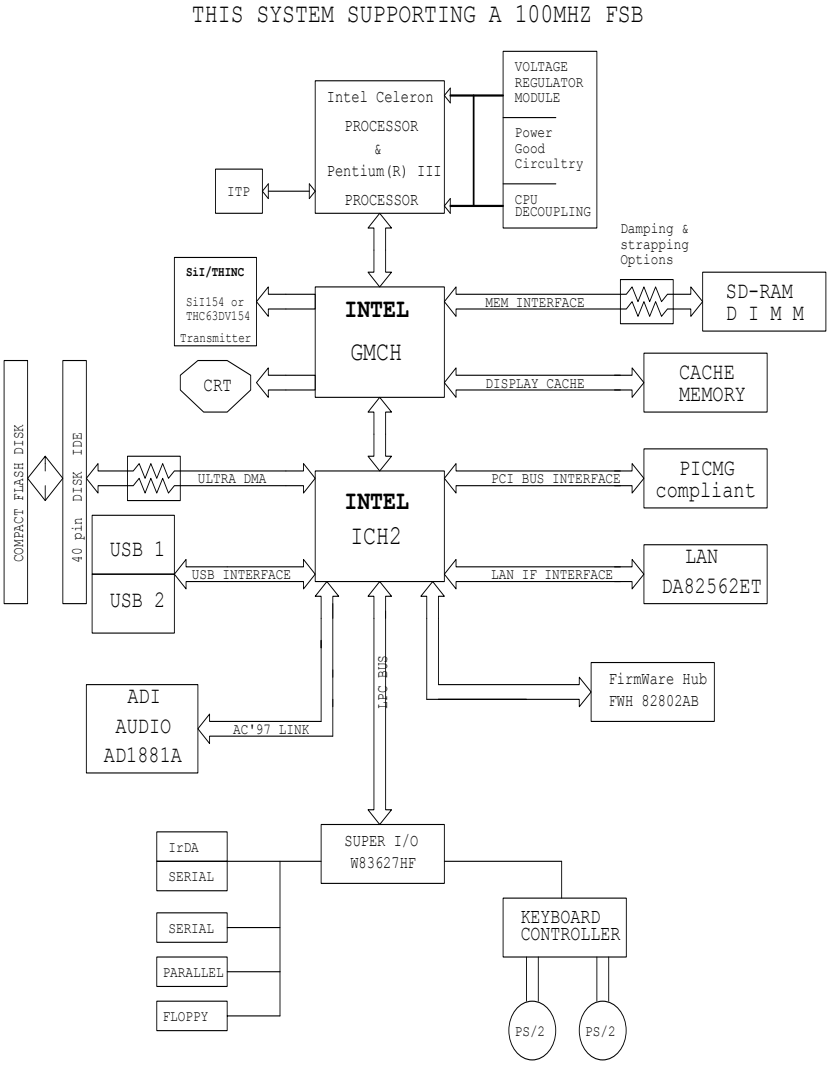


Figure 1-2 PEB-6630/6631VLA System Block Diagram

CHAPTER 2
Hardware Configuration Setting

This chapter gives the definitions and shows the positions of jumpers, headers and connectors. All of the configuration jumpers on PEB-6630/6631 are in the proper position. The default settings shipped from factory are marked with a star (★).

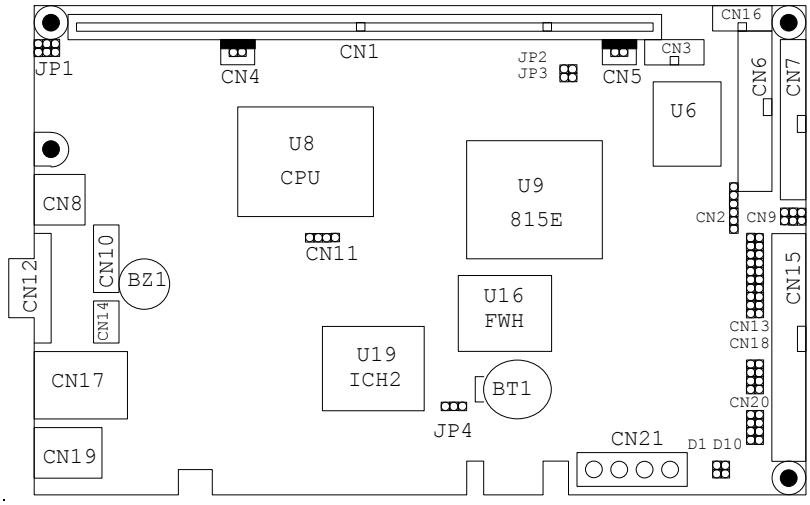


Figure 2-1 PEB-6630/6631VLA Jumper / Connector Position

2.1 Jumpers Position and Setting Table

In general, jumpers on the single board computer are used to select options for certain features. Some of the jumpers are designed to be user-configurable, allowing for system enhancement. The others are for testing purpose only and should not be altered. To select any option, cover the jumper cap over (Short) or remove (NC) it from the jumper pins according to the following instructions. Here NC stands for "Not Connected". (**Figure 2-1**)

ATX/AT Power Jumper (JP1)

JP1	Function
3-5, 4-6	Select ATX Power Supply ★
1-3, 2-4	Select AT Power Supply

System Reset Jumper (JP2)

JP2	Function
Short	Enabled
NC	Disabled ★

ATX Power Button Jumper (JP3)

JP3	Function
Short	Enabled
NC	Disabled ★

CMOS Clear Jumper (JP4)

JP4	Function
1-2	Normal Operation ★
2-3	Clear CMOS Contents

2.2 Connectors

I/O peripheral devices and Flash disk are connected to the interface connectors and DOC socket located on this single board computer (**Figure 2-2**).

Connector	Function
CN1	168 Pin DIMM SDRAM SOCKET Connector
CN2	IrDA Header
CN3	Serial Port 2 x 5 shrouded Connector (Com 2)
CN4	+5V FAN power Connector
CN5	+5V FAN power Connector
CN6	Parallel port Connector
CN7	Floppy disk Interface
CN8	PS/2 KB & MS Connector (6-pin Mini-DIN)
CN9	Panel's invert Connector
CN10	Keyboard external Header
CN11	Reserved 4 Pin GPIO Connector
CN12	VGA - DSUB15 Connector
CN13	Flat panel Display Interface
CN14	ATX power control Connector
CN15	IDE Interface Connector
CN16	Serial Port 2 x 5 shrouded Connector (Com 1)
CN17	Ethernet RJ-45 Interface Connector
CN18	MIC and CD-ROM Line-In Interface Connector
CN19	USB Interface Connector
CN20	Audio Line-in and Line-out Interface Connector
CN21	Standard Power Connector (5V only) *Big 4 pin connector
CN22	Compact Flash Card Interface Connector

Pin Assignments of Connectors

□ CN1: 168 Pin DIMM SDRAM SOCKET Connector
One 168-pin DIMM socket and up to 512MB SDRAM (Using 3.3V 16-/64-/128-MB technology)

□ CN2: IrDA Header

PIN No.	Signal Description	PIN No.	Signal Description
1	VCC	4	GND
2	NC	5	TX
3	RX	6	NC

□ CN3/CN16: Communication Serial Port (RS-232) COM 1/2

PIN No.	Signal Description	PIN No.	Signal Description
1	DCD	6	DSR
2	RX	7	RTS
3	TX	8	CTS
4	DTR	9	RIN
5	Ground	10	NC

□ CN4/CN5: +5V FAN Power Connector

PIN No.	Signal Description
1	GND
2	VCC

□ CN6: Parallel Port Interface

PIN No.	Signal Description	PIN No.	Signal Description
1	RESET#	2	DATA0
3	DATA1	4	DATA2
5	DATA3	6	DATA4
7	DATA5	8	DATA6
9	DATA7	10	ACK#
11	BUSY	12	PE
13	SLCT	14	AFD#
15	ERROR#	16	INIT#
17	SLIN#	18	GND
19	GND	20	GND
21	GND	22	GND
23	GND	24	GND
25	GND	26	NC

□ CN7: Floppy Disk Interface

PIN No.	Signal Description	PIN No.	Signal Description
1	GND	2	EN1
3	GND	4	NC
5	GND	6	EN2
7	GND	8	INDEX#
9	GND	10	MOA#
11	GND	12	DSB#
13	GND	14	DSA#
15	GND	16	MOB#
17	GND	18	DIR#
19	GND	20	SETP#
21	GND	22	WRDATA#
23	GND	24	WE#
25	GND	26	TRACK0#
27	GND	28	WRPT#
29	NC	30	RDATA#
31	GND	32	HEAD#
33	NC	34	DSKCHG#

□ CN8: PS/2 KB & MS Connector (6pin Mini-Din)

PIN No.	Signal Description	PIN No.	Signal Description
1	MS_DATA	4	VCC
2	KB_DATA	5	MS_CLK
3	GND	6	KB_CLK

□ CN10: Keyboard External Header

PIN No.	Signal Description
1	KB_CLK
2	KB_DATA
3	NC
4	GND
5	VCC

□ CN12: VGA DSUB-15 Connector

PIN No.	Signal Description	PIN No.	Signal Description
1	RED	9	VCC
2	GREEN	10	GND
3	BLUE	11	NC
4	NC	12	DATA
5	GND	13	HSYNC
6	GND	14	VSYNC
7	GND	15	CLK
8	GND		

□ CN13: Flat Panel Display Connector

PIN No.	Signal Description	PIN No.	Signal Description
1	TX1+	2	TX2+
3	TX1-	4	TX2-
5	GND	6	GND
7	GND	8	GND
9	TXC+	10	TX0+
11	TXC-	12	TX0-
13	GND	14	GND
15	VCC	16	NC
17	VCC	18	DATA
19	VCC	20	CLK

□ CN14: ATX Power Control

PIN No.	Signal Description
1	POWER_OK
2	ATX5VSB
3	PWR_ON#
4	GND

□ CN15: IDE Interface

PIN No.	Signal Description	PIN No.	Signal Description
1	Reset	2	D7
3	D7	4	D8
5	D6	6	D9
7	D5	8	D10
9	D4	10	D11
11	D3	12	D12
13	D2	14	D13
15	D1	16	D14
17	D0	18	D15
19	Ground	20	NC
21	DREQ	22	Ground
23	IOW	24	Ground
25	IOR	26	Ground
27	IORDY	28	Pull Down
29	DACK	30	Ground
31	IRQ14	32	CS16
33	DA1	34	NC
35	DA0	36	DA2
37	CS1	38	CS3
39	ACTIVE	40	Ground

□ CN17: Ethernet RJ-45 Interface Connector

PIN No.	Signal Description
1	TX+
2	TX-
3	TDC
4	GND
5	GND
6	RDC
7	RX+
8	RX-
9	GREEN +
10	GREEN -
11	YELLOW +
12	YELLOW -

□ CN18: CD-ROM LINE-IN and MIC-IN Interface Connector

PIN No.	Signal Description	PIN No.	Signal Description
1	CD_R	5	MIC_IN
2	GND	6	GND
3	GND	7	GND
4	CD_L	8	VREFOUT

□ CN19: Dual Universal Serial BUS Stack Up Connector

PIN No.	Signal Description	PIN No.	Signal Description
1	OC0	5	OC1
2	P0-	6	P1-
3	P0+	7	P1+
4	Ground	8	Ground

□ CN20: LINE-IN and LINE-OUT Interface Connector

PIN No.	Signal Description	PIN No.	Signal Description
1	LINE_IN_R	4	LINE_OUT_R
2	GND	5	GND
3	GND	6	GND
4	LINE_IN_L	8	LINE_OUT_L

□ CN21: Standard Power Connector (BIG 4 PIN)

PIN No.	Signal Description
1	+12V
2	Ground
3	Ground
4	+5V

□ CN22: Compact Flash Socket

PIN No.	Signal Description	PIN No.	Signal Description
1	Ground	26	CD1
2	D3	27	D11
3	D4	28	D12
4	D5	29	D13
5	D6	30	D14
6	D7	31	D15
7	CS1	32	CS3
8	A10	33	VS1
9	Output Enable	34	IOR
10	A9	35	IOW
11	A8	36	Write Enable
12	A7	37	IRQ
13	+5V	38	+5V
14	A6	39	CSEL
15	A5	40	VS2
16	A4	41	RESET
17	A3	42	IORDY
18	A2	43	DREQ
19	A1	44	DACK
20	A0	45	VD2
21	D0	46	VD1
22	D1	47	D8
23	D2	48	D9
24	CS16	49	D10
25	CD2	50	Ground

□ PCI1: PCI Gold Finger

PIN No.	Signal Description	PIN No.	Signal Description
B1	-12V	A1	TRST#
B2	TCK	A2	+12V
B3	GND	A3	TMS
B4	TDO	A4	TDI
B5	+5V	A5	+5V
B6	+5V	A6	INTA#
B7	INTB#	A7	INTC#
B8	INTD#	A8	+5V
B9	REQ3#	A9	PCI_CLK3
B10	REQ1#	A10	+5V
B11	GNT3#	A11	PCI_CLK4
B12	GND	A12	GND
B13	GND	A13	GND
B14	PCI_CLK1	A14	GNT1#
B15	GND	A15	RESET#
B16	PCK_CLK2	A16	+5V
B17	GND	A17	GNT0#
B18	REQ0#	A18	GND
B19	+5V	A19	REQ2#
B20	AD31	A20	AD30
B21	AD29	A21	GND
B22	GND	A22	AD28
B23	AD27	A23	AD26
B24	AD25	A24	GND
B25	+3.3V	A25	AD24
B26	C/BE#3	A26	GNT2#
B27	AD23	A27	+3.3V
B28	GND	A28	AD22
B29	AD21	A29	AD20
B30	AD19	A30	GND
B31	+3.3V	A31	AD18
B32	AD17	A32	AD16
B33	C/BE#2	A33	+3.3V
B34	GND	A34	FRAME#
B35	IRDY#	A35	GND
B36	+3.3V	A36	TRDY#
B37	DEVSEL#	A37	GND
B38	GND	A38	STOP#

B39	LOCK#	A39	+3.3V
B40	PERR#	A40	SDONE
B41	+3.3V	A41	SBO#
B42	SERR#	A42	GND
B43	+3.3V	A43	PAR
B44	C/BE#1	A44	AD15
B45	AD14	A45	+3.3V
B46	GND	A46	AD13
B47	AD12	A47	AD11
B48	AD10	A48	GND
B49	GND	A49	AD9
B50	KEY	A50	KEY
B51	KEY	A51	KEY
B52	AD8	A52	C/BE#0
B53	AD7	A53	+3.3V
B54	+3.3V	A54	AD6
B55	AD5	A55	AD4
B56	AD3	A56	GND
B57	GND	A57	AD2
B58	AD1	A58	AD0
B59	+5V	A59	+5V
B60	ACK64#	A60	REQ64#
B61	+5V	A61	+5V
B62	+5V	A62	+5V

**These power signals (+12V & +3.3V) are not into this PCI interface

CHAPTER 3
System Installation

This chapter provides you with instructions to set up your system. The additional information is enclosed to help you set up onboard PCI device and handle WDT operation in software programming.

3.1 Low Voltage Intel Celeron/Pentium-III Processor

Configuring System Bus

PEB-6630/6631VLA will automatically detect system bus based on the CPU used. However, users may configure CPU core/bus ratio in BIOS setup menu for engineering sample processor.

3.2 Main Memory

PEB-6630/6631VLA provides one DIMM socket (168-pin Dual In-line Memory Module) to support 3.3V SDRAM (Synchronized DRAM) as on-board main memory. The maximum memory size is 512MB. PEB-6630/6631VLA will automatically detect memory clock, based on the processor and SDRAM used. Please refer to the following table as your reference.

PEB-6630/6631VLA Memory Clock Reference Table

Processor FSB	PC-100SDRAM	PC-133SDRAM
100MHz	100MHz	100MHz

For system compatibility and stability, don't use memory module without brand. You can also use single-sided or double-sided DIMM with ECC feature(2).

Watch out the contact and lock integrity of memory module with socket, it will impact on the system reliability. Follow normal procedure to install your DRAM module into memory socket. Before locking, make sure that the module has been fully inserted into the card slot.

NOTE:
(1) To maintain system stability, don't change any of DRAM parameters in BIOS setup to upgrade your system performance without acquiring technical information.

(2) Due to Intel 82815-chipset limitation, SDRAM with ECC function is not supported. In the event of ECC SDRAM being adopted, ECC function is NOT supported while it is still OK to use this type of SDRAM.
(3) Due to Intel 82815 chipset limitation, Buffered (Registered) SDRAM is not supported. Buffered SDRAM will simply freeze up or annoy your system.

3.3 Installing the Single Board Computer

To install your PEB-6630/6631VLA into a standard chassis or proprietary environment, you need to perform the following:

Step 1: Check all jumpers setting on proper position
Step 2: Install and configure CPU and memory module on right position
Step 3: Place PEB-6630/6631VLA into the dedicated position in your system
Step 4: Attach cables to existing peripheral devices and secure it

WARNING

Please ensure that your SBC is properly inserted and fixed by mechanism. Otherwise, the system might be unstable or do not work due to bad contact of golden finger and PCI-bus slot. **It is recommended to apply 4-pin 5-1/4" IDE device power connectors from your power supply onto CN21 to ensure a sufficient current supply.**

NOTE: Please refer to section 3-3-1 to 3-3-3 to install INF/VGA/LAN drivers.

3.3.1 INF Chipset Component Driver

Intel 82815 GMCH chipset is a new chipset that a few old operating systems might not be able to recognize. **To overcome this compatibility issue, for Windows Operating Systems such as Windows-95/98/98SE/2000, please install INF Chipset Component driver before any of other Drivers are installed**.

You can find very easily the INF chipset component driver in /INF directory of PEB-6630/6631VLA CD-title. Please execute "Setup.exe" to start installation.

3.3.2 Intel 82815 GMCH Graphics Controller

Intel 82815 GMCH chipset is the result of new design approach to optimize the shared memory architecture while maintaining the cost benefits of integration through Direct AGP and Dynamic Video Memory Technology.

With no additional video adaptor, this onboard video will be the system display output. However, system will automatically switch to off-board video adaptor if there is any. In this case, onboard 82815 GMCH graphic features will be disabled.

There is no way to disable this onboard video function, unless one off-board PCI video card is applied onto the backplane. In this case, the off-board video card shall be picked up first based on the default BIOS setup (Initial Display First) in "Integrated Peripheral" Setup Menu.

Drivers Support

Please find Intel 82815 GMCH driver in /Graphics directory of PEB-6630/6631VLA CD-title. Drivers support Windows-3.1, Windows-95/98/98SE/ME, Windows-NT 3.51/4.0, Windows-2000, OS2, and Linux.

(1) Windows-95: Please bring up the Display Control Panel and update graphics driver with /Graphics/win9x/Graphics/Win9x/I81xw9x.inf.

(2) Windows-98/98SE/ME: Please execute /Graphics/win9x/Graphics/Setup.exe to start graphics drivers installation, or bring up the Display Control Panel and update graphics driver with /Graphics/win9x/Graphics/Win9x/I81xw9x.inf.

(3) Windows-NT 4.0: Please install Windows-NT 4.0 Service Pack 4 or above first, then execute /Graphics/Winnt4/Graphics/Setup.exe, or simply bring up the Display Control Panel and update graphics driver with /Graphics/winnt4/Graphics/WinNT4/I81xNT4.inf.

(4) Windows-2000: Please bring up the Device Manager and update graphics drivers with /Graphics/win2k/Graphics/Win2000/I81xNT5.inf.

(5) Redhat Linux V6.2: Please refer to the "release_linux.pdf" readme file in /Graphics/Linux directory for graphics drivers installation guide.

3.3.3 Intel 82801BA MAC Fast Ethernet Controller

This Fast Ethernet function is supported by Intel 82801BA (ICH2) embedded PHY and interfaced via Intel 82562ET Platform LAN Connect (PLC).

Drivers Support

Please find LAN driver in /Ethernet directory of PEB-6630/6631VLA CD-title. The drivers support Windows-NT 3.51/4.0, Windows-95/98/98SE/ME, Windows-2000, and SCO OpenServer 5.0.2, SCO Unixware 7.0, OS2 and Linux.

In Windows environment, Intel 82801BA MAC Fast Ethernet should appear as Intel (R) PRO/100 VE Network Connection.

On-board LED Indicator (for LAN status)

PEB-6630/6631VLA provides two LED indicators with RJ-45 connector to report Intel 82801BA MAC Fast Ethernet interfaces status. Please refer to the table below as a quick reference guide.

Intel 82801BA MAC	Name of LED	Operation of Ethernet Port	
		ON	Off
Amber	LAN speed LED	100 Mbps	10 Mbps
Green	LAN active LED	Active	No active
Green	LAN Link Integrity LED	Good link in 10 or 100 Mbps	No link

There is no way to disable this onboard Ethernet function.

3.3.4 Intel 82801BA AC'97 Codec Controller

This on-board Audio function is supported by Intel 82801BA (ICH2) embedded AC'97 Codec Controller.

Drivers Support

Please find Sound driver in /Sound directory of PEB-6630/6631VLA CD-title. The drivers support Windows-NT 3.51/4.0, Windows-95/98/98SE, and Windows-2000.

To disable this onboard Audio function, please configure the "Integrated Peripheral" Setup Menu in BIOS. Change the "AC'97 Audio" setting to "Disabled" will help you to turn off this PCI Audio device.

3.4 Clear CMOS Operation

The following table indicates how to enable/disable CMOS Clear Function hardware circuit by putting jumpers at proper position.

JP4	FUNCTION
1-2	Clear CMOS Contents
2-3	Normal Operation

To correct operate CMOS Clear function, users may turn off the system, move JP4 jumper to 1-2 position (this will not consume any power). To clear CMOS, please turn on the power and turn it off again for AT system, or press the toggle switch a few times for ATX system. Move the JP4 back to 2-3 position (Normal Operation) and start the system. System will then produce a "CMOS Check Sum Error" message and hold up. Users may then follow the displayed message to load in BIOS default setting.

3.5 Watch Dog Timer Programming

There is one programming guide (source code in Assembly language) and test program in PEB-6630/6631VLA CD-title. Please refer to the programming guide to create your own Watch Dog Timer application, and feel the Timer by using the demo program.

CHAPTER 4
BIOS Setup Information

PEB-6630/6631VLA is equipped with the AWARD BIOS stored in Flash ROM. This BIOS has a built-in Setup program that allows users to modify the basic system configuration easily. This type of information is stored in CMOS RAM so that it is retained during power-off periods. When system is turned on, PEB-6630/6631VLA communicates with peripheral devices and check its hardware resources against the configuration information stored in the CMOS memory. If any error is detected, or the CMOS parameters need to be initially defined, the diagnostic program will prompt the user to enter the SETUP program. Some errors are significant enough to abort the start-up.

4.1 Entering Setup

Turn on or reboot the computer. When the message "Hit <DEL> if you want to run SETUP" appears, press <Del> key immediately to enter BIOS setup program.

If the message disappears before you respond, but you still wish to enter Setup, please restart the system to try "COLD START" again by turning it OFF and then ON, or touch the "RESET" button. You may also restart from "WARM START" by pressing <Ctrl>, <Alt>, and <Delete> keys simultaneously. If you do not press the keys at the right time and the system will not boot, an error message will be displayed and you will again be asked to,

Press <F1> to Run SETUP or Resume

In HIFLEX BIOS setup, you can use the keyboard to choose among options or modify the system parameters to match the options with your system. The table below will show you all of keystroke functions in BIOS setup.

Keys to navigate within setup menu

Key	Functions
Up Arrow	Move to the previous item
Down Arrow	Move to the next item
Left Arrow	Move to the item on the left (menu bar)
Right Arrow	Move to the item on the right (menu bar)
Move Enter	Move to the item you desired
PgUp key	Increase the numeric value or make changes
PgDn key	Decrease the numeric value or make changes
+ key	Increase the numeric value or make changes
- key	Decrease the numeric value or make changes
Esc key	Main Menu -- Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
F1 key	General help on Setup navigation keys
F5 key	Load previous values from CMOS
F6 key	Load the fail-safe defaults from BIOS default table
F7 key	Load the optimized defaults
F10 key	Save all the CMOS changes and exit

4.2 Main Menu

Once you enter PEB-6630/6631VLA AWARD BIOS CMOS Setup Utility, you should start with the Main Menu. The Main Menu allows you to select from eleven setup functions and two exit choices. Use arrow keys to switch among items and press <Enter> key to accept or bring up the sub-menu.

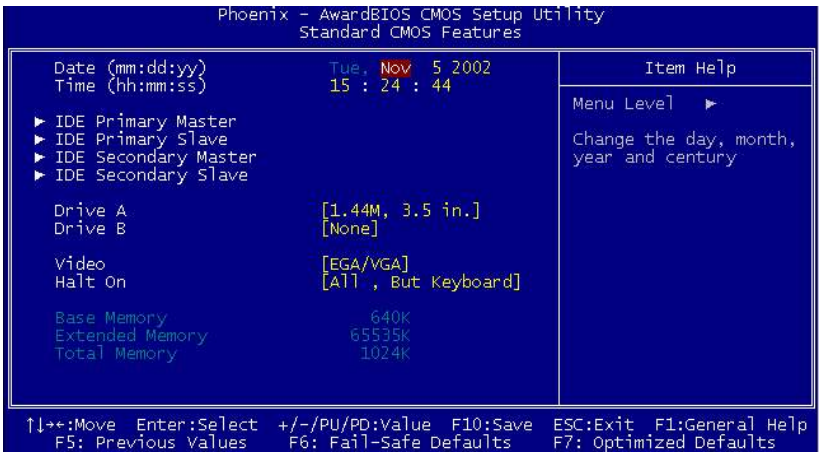
Phoenix - AwardBIOS CMOS Setup Utility
Standard CMOS Features
Advanced BIOS Features
Advanced Chipset Features
Integrated Peripherals
Power Management Setup
PnP/PCI Configurations
PC Health Status
Frequency/Voltage Control
Load Fail-Safe Defaults
Load Optimized Defaults
Set Supervisor Password
Set User Password
Save & Exit Setup
Exit Without Saving
Esc : Quit F9 : Menu in BIOS ↑ ↓ → ← : Select Item
F10 : Save & Exit Setup
Time, Date, Hard Disk Type...

NOTE : It is strongly recommended to reload the Optimized Default Setting if CMOS is lost or BIOS is updated.

4.3 Standard CMOS Setup Menu

This setup page includes all the items in a standard compatible BIOS. Use the arrow keys to highlight the item and then use the <PgUp>/<PgDn> or <+>/<-> keys to select the value or number you want in each item and press <Enter> key to certify it.

Follow command keys in CMOS Setup table to change **Date**, **Time**, **Drive type**, and **Boot Sector Virus Protection Status**.

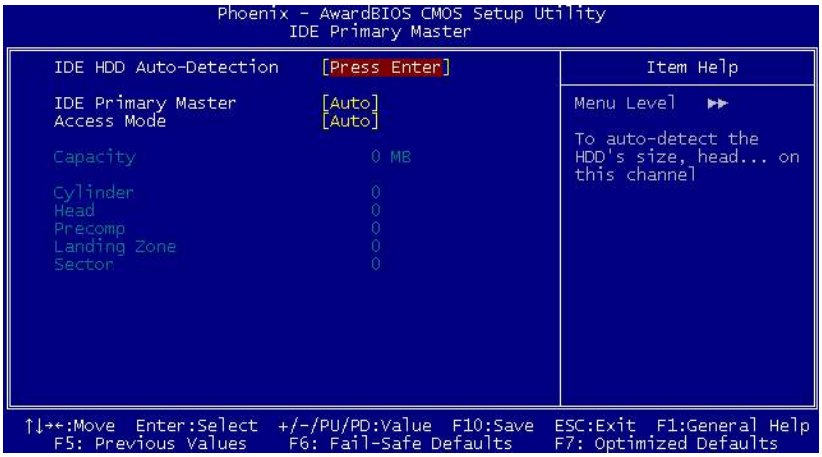

Phoenix - AwardBIOS CMOS Setup Utility
Standard CMOS Features
Date (mm:dd:yy) Tue, Nov 5 2002
Time (hh:mm:ss) 15 : 24 : 44
IDE Primary Master
IDE Primary Slave
IDE Secondary Master
IDE Secondary Slave
Drive A [1.44M, 3.5 in.]
Drive B [None]
Video [EGA/VGA]
Halt On [All , But Keyboard]
Base Memory 640K
Extended Memory 65535K
Total Memory 1024K
Item Help
Menu Level ►
Change the day, month, year and century
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

■ **Menu seletions**

Item	Options	Description
Date	Mm:dd:yy	Set the system date. Note that the 'Day' automatically changes when you set the date
Time	Hh:mm:ss	Set the system time
IDE Primary Master	Options are in its sub menu (described in 4.4 Table)	Press <Enter> to enter the sub menu of detailed options
IDE Primary Slave	Options are in its sub menu (described in 4.4 Table)	Press <Enter> to enter the sub menu of detailed options
IDE Secondary Master	Options are in its sub menu (described in 4.4 Table)	Press <Enter> to enter the sub menu of detailed options
IDE Secondary Slave	Options are in its sub menu (described in 4.4 Table)	Press <Enter> to enter the sub menu of detailed options
Drive A Drive B	None 360K, 5.25 in 1.2M, 5.25 in 720K, 3.5 in 1.44M, 3.5 in 2.88M, 3.5 in	Select the type of floppy disk drive installed in your system
Video	EGA/VGA CGA 40 CGA 80 MONO	Select the default video device
Halt On	All Errors No Errors All, but Keyboard All, but Diskette All, but Disk/Key	Select the situation in which you want the BIOS to stop the POST process and notify you
Base Memory	N/A	Displays the amount of conventional memory detected during boot up
Extended Memory	N/A	Displays the amount of extended memory detected during boot up
Total Memory	N/A	Displays the total memory available in the system

4.4 IDE Adaptors Setup Menu

The IDE adapters control the IDE devices, such as hard disk drive or cdrom drive. It uses a separate sub menu to configure each hard disk drive.


Phoenix - AwardBIOS CMOS Setup Utility
IDE Primary Master
IDE HDD Auto-Detection [Press Enter]
IDE Primary Master [Auto]
Access Mode [Auto]
Capacity 0 MB
Cylinder 0
Head 0
Precomp 0
Landing Zone 0
Sector 0
Item Help
Menu Level ▶▶
To auto-detect the HDD's size, head... on this channel
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

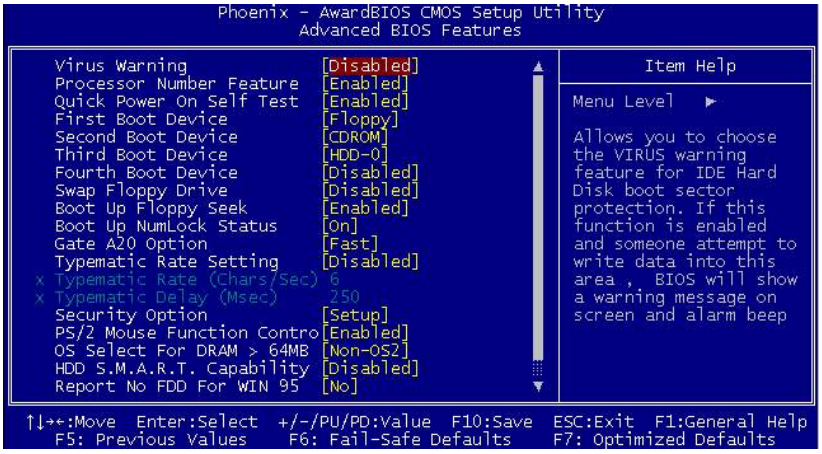
Remark: A 20 GB Hard Drive is used above for the demostration.

■ **Menu seletions**

Item	Options	Description
IDE HDD Auto-detection	Press Enter	Press Enter to auto-detect the HDD on this channel. If detection is successful, it fills the remaining fields on this menu.
IDE Primary Master	None Auto Manual	Selecting 'manual' lets you set the remaining fields on this screen. Selects the type of fixed disk. "User Type" will let you select the number of cylinders, heads, etc. NOTE: PRECOMP=65535 means NONE !
Capacity	Auto Display your disk drive size	Disk drive capacity (Approximated). Note that this size is usually slightly greater than the size of a formatted disk given by a disk checking program.
Access Mode	Normal LBA Large Auto	Choose the access mode for this hard disk
The following options are selectable only if the 'IDE Primary Master' item is set to 'Manual'		
Cylinder	Min = 0 Max = 65535	Set the number of cylinders for this hard disk.
Head	Min = 0 Max = 255	Set the number of read/write heads
Precomp	Min = 0 Max = 65535	**** **Warning**: Setting a value of 65535 means no hard disk
Landing zone	Min = 0 Max = 65535	****
Sector	Min = 0 Max = 255	Number of sectors per track

4.5 Advanced BIOS Features

This section allows you to configure your system for basic operation. You have the opportunity to select the system's default speed, boot-up sequence, keyboard operation, shadowing and security.


Phoenix - AwardBIOS CMOS Setup Utility
Advanced BIOS Features
Virus Warning [Disabled]
Processor Number Feature [Enabled]
Quick Power On Self Test [Enabled]
First Boot Device [Floppy]
Second Boot Device [CDROM]
Third Boot Device [HDD-0]
Fourth Boot Device [Disabled]
Swap Floppy Drive [Disabled]
Boot Up Floppy Seek [Enabled]
Boot Up NumLock Status [On]
Gate A20 Option [Fast]
Typematic Rate Setting [Disabled]
x Typematic Rate (Chars/Sec) 6
x Typematic Delay (Msec) 250
Security Option [Setup]
PS/2 Mouse Function Contro [Enabled]
OS Select For DRAM > 64MB [Non-OS2]
HDD S.M.A.R.T. Capability [Disabled]
Report No FDD For WIN 95 [No]
Item Help
Menu Level ▶
Allows you to choose the VIRUS warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write data into this area , BIOS will show a warning message on screen and alarm beep
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

Virus Warning

Enabled	Activates automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector or hard disk partition table.
Disabled	No warning message will appear when anything attempts to access the boot sector or hard disk partition table.

Quick Power On Self Test

This category speeds up Power On Self Test (POST) after you power up the computer. If it is set to Enable, BIOS will shorten or skip some check items during POST.

Enabled	Enable quick POST
Disabled	Normal POST

First/Second/Third/Fourth Boot Device

The BIOS attempts to load the operating system from the devices in the sequence selected in these items.

The choices: Floppy, LS120, ZIP100, HDD, SCSI, CDROM, LAN, and Disabled.

Boot Up NumLock Status

Select power on state for NumLock.

The choices: Enabled/Disabled.

Typematic Rate Setting

Key strokes repeat at a rate determined by the keyboard controller. When enabled, the typematic rate and typematic delay can be selected.

The choices: Enabled/Disabled.

Typematic Rate (Chars/Sec)

Sets the number of times a second to repeat a key stroke when you hold the key down.

The choices: 6, 8, 10, 12, 15, 20, 24, 30.

Typematic Delay (Msec)

Sets the delay time after the key is held down before it begins to repeat the keystroke.

The choices: 250, 500, 750, 1000.

Security Option

Select whether the password is required every time the system boots or only when you enter setup.

System	The system will not boot and access to Setup will be denied if the correct password is not entered at the prompt.
Setup	The system will boot, but access to Setup will be denied if the correct password is not entered at the prompt.

NOTE : To disable security, select PASSWORD SETTING at Main Menu and then you will be asked to enter password. Do not type anything and just press <Enter>, it will disable security. Once the security is disabled, the system will boot and you can enter Setup freely.

OS Select For DRAM > 64MB

Select the operating system that is running with greater than 64MB of RAM on the system.

The choices: Non-OS2, OS2.

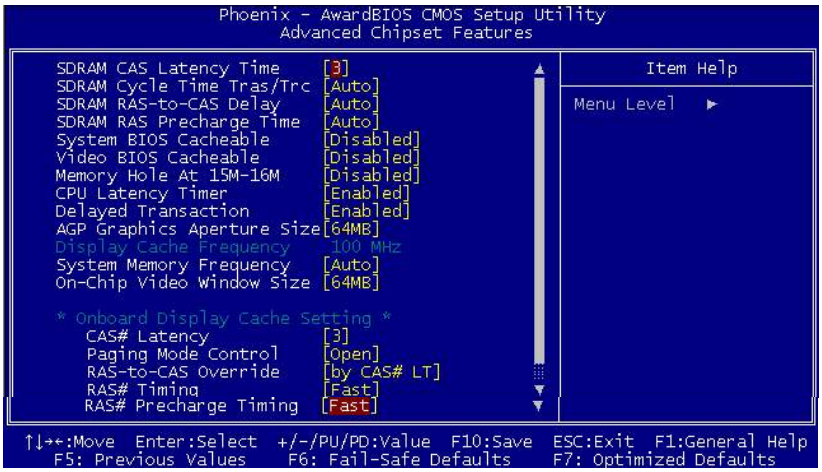
HDD S.M.A.R.T. Capability

This option allows users to enable/disable the PC to predict the future failure of hard drive.

The choices: Enabled, Disabled.

4.6 Advanced Chipset Features

This section allows you to configure the system based on the specific features of the Intel 82815 GMCH chipset. This chipset manages bus speeds and access to system memory resources, such as DRAM (SDRAM) and the external cache. It also coordinates communications between the conventional ISA bus and the PCI bus. It must be stated that these items should never need to be altered. The default settings have been chosen because they provide the best operating conditions for your system. The only time you might consider making any changes would be if you discovered that data was being lost while using your system.


Phoenix - AwardBIOS CMOS Setup Utility
Advanced Chipset Features
SDRAM CAS Latency Time [3]
SDRAM Cycle Time Tras/Trc [Auto]
SDRAM RAS-to-CAS Delay [Auto]
SDRAM RAS Precharge Time [Auto]
System BIOS Cacheable [Disabled]
Video BIOS Cacheable [Disabled]
Memory Hole At 15M-16M [Disabled]
CPU Latency Timer [Enabled]
Delayed Transaction [Enabled]
AGP Graphics Aperture Size [64MB]
Display Cache Frequency 100 MHz
System Memory Frequency [Auto]
On-Chip Video Window Size [64MB]
* Onboard Display Cache Setting *
CAS# Latency [3]
Paging Mode Control [Open]
RAS-to-CAS Override [by CAS# LT]
RAS# Timing [Fast]
RAS# Precharge Timing [Fast]
Item Help
Menu Level ▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

This chipset settings deal with CPU access to dynamic random access memory (DRAM). The default timings have been carefully chosen and should only be altered if data is being lost. Such a scenario might well occur if your system had mixed speed DRAM chips installed so that greater delays may be required to preserve the integrity of the data held in the slower memory chips.

SDRAM CAS Latency Time

This option controls the number of SCLKs between the time a read command is sampled by the SDRAMs and the time the GMCH samples correspondent data from the SDRAMs.

The choices: 2, 3 SCLKs.

SDRAM Cycle Time Tras/Trc

This option controls the number of SDRAM clocks used per access cycle.

The choices: 5/7, 7/9.

SDRAM RAS-to-CAS Delay

This option controls the number of SCLKs (SDRAM Clock) from a row activate command to a read or write command. If your system installs good quality of SDRAM, you can set this option to "3 SCLKs" to obtain better memory performance. Normally, the option will be set to 3 SCLKs.

The choices: 2, 3 SCLKs.

SDRAM RAS Precharge Time

This option controls the number of SCLKs for RAS# precharge. If your system installs good quality of SDRAM, you can set this option to "3 SCLKs" to obtain better memory performance.

The choices: 2, 3 SCLKs.

System BIOS Cacheable

Selecting Enabled allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result.

The choices: Enabled/Disabled.

Video BIOS Cacheable

Select "Enabled" to enable caching VGA BIOS into L2 cache to get higher display performance. "Disabled" will ignore this BIOS caching function.

The choices : Enabled/Disabled

Memory Hole At 15-16M

In order to improve performance, certain space in memory is reserved for ISA cards. This memory must be mapped into the memory space below 16MB.

The choices: Enabled/Disabled.

System Memory Frequency

This option allows users to configure the system memory frequency. The default setting is Auto.

The choices: 100MHz, 133MHz and Auto.

On-Chip Video Window Size

This option allows you to select the size of mapped memory for AGP graphic data.

The choices: 64MB/Disabled.

CAS# Latency

This option selects in units of local memory clock periods.

The choices: 2, 3 SCLKs.

Paging Mode Control

This option controls GMCH memory controller tends to leave pages open or pages close.

The choices: Open / Close.

RAS-to-CAS Override

This option selects in units of display cache clock periods indicates the RAS#-to-CAS# delay.

The choices: by CAS# LT / Override(2).

RAS# Timing

This option controls RAS# active to precharge, and refresh to RAS# active delay.

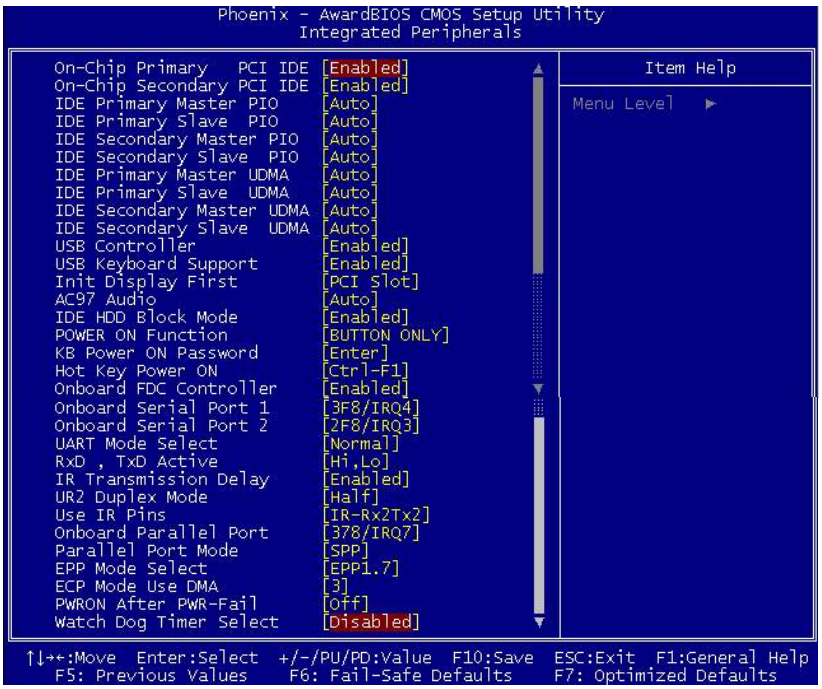
The choices: Fast / Slow.

RAS# Precharge Timing

This option controls RAS# precharge in local memory clocks.

The choices: Fast / Slow.

4.7 Integrated Peripherals


Phoenix - AwardBIOS CMOS Setup Utility
Integrated Peripherals
On-Chip Primary PCI IDE [Enabled]
On-Chip Secondary PCI IDE [Enabled]
IDE Primary Master PIO [Auto]
IDE Primary Slave PIO [Auto]
IDE Secondary Master PIO [Auto]
IDE Secondary Slave PIO [Auto]
IDE Primary Master UDMA [Auto]
IDE Primary Slave UDMA [Auto]
IDE Secondary Master UDMA [Auto]
IDE Secondary Slave UDMA [Auto]
USB Controller [Enabled]
USB Keyboard Support [Enabled]
Init Display First [PCI Slot]
AC97 Audio [Auto]
IDE HDD Block Mode [Enabled]
POWER ON Function [BUTTON ONLY]
KB Power ON Password [Enter]
Hot Key Power ON [Ctrl-F1]
Onboard FDC Controller [Enabled]
Onboard Serial Port 1 [3F8/IRQ4]
Onboard Serial Port 2 [2F8/IRQ3]
UART Mode Select [Normal]
RxD , TxD Active [Hi,Lo]
IR Transmission Delay [Enabled]
UR2 Duplex Mode [Half]
Use IR Pins [IR-Rx2Tx2]
Onboard Parallel Port [378/IRQ7]
Parallel Port Mode [SPP]
EPP Mode Select [EPP1.7]
ECP Mode Use DMA [3]
PWRON After PWR-Fail [Off]
Watch Dog Timer Select [Disabled]
Item Help
Menu Level ►
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

OnChip Primary/Secondary PCI IDE

The chipset contains a PCI IDE interface with support for two IDE channels. Select Enabled to activate the primary IDE interface. Select Disabled to deactivate this interface

The choices: Enabled/Disabled.

IDE Primary/Secondary Master/Slave PIO

The two IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the two IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device.

The choices: Auto, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

IDE Primary/Secondary Master/Slave UDMA

Ultra DMA/33/66/100 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus master driver). If your hard drive and your system software both support Ultra DMA/33/66/100, select Auto to enable BIOS support.

The choices: Auto, Disabled.

USB Controller

This item allows you to enable/disable USB (Universal Serial Bus) function.

The choices: Enabled/Disabled

USB Keyboard Support

This item allows you to enable USB keyboard function under POST, BIOS setup menu, DOS, or Windows-NT with no USB driver loaded.

The choices: Enabled/Disabled

Init Display First

This item allows you to select the first display port to be initialized.

The choices: PCI Slot (off-board video adaptor), Onboard/AGP

AC97 Audio

This item allows you to enable/disable the on-board audio. Default setting is Auto.

The choices: Auto/Disabled

IDE HDD Block Mode

This item allows you to enable/disable IDE HDD Block Mode. The function is to collect the data that is nearby the one being read and leave them in the system buffer. Buffered data can be used with faster transmission rate so as to enhance system performance.

The choices: Enabled/Disabled

Power On Function

This item allows you to select different power on scheme using ATX power supply.

Button Only	Power on by power Button
Keyboard 98	Power on by keyboard 98
Password	Power on using customized password string

Keyboard Power On Password

In the event of "Power On Function" being configured as "Password", this item will be enabled for tuning. Press "Enter" key to enter a customized password, and confirm again when being asked. In the case that the confirmed password does not match the configured one, the message of "Password Disabled – Press any key to continue…" will be prompted.

4.8 Onboard FDC Controller

This item allows you to enable/disable onboard Floppy disk controller.

The choices: Enabled/Disabled

4.9 Onboard Serial Port 1/Port 2

Select an address and corresponding interrupt for the first and second serial ports.

The choices: 3F8/IRQ4, 2E8/IRQ3, 3E8/IRQ4, 2F8/IRQ3, Disabled, Auto.

4.10 UART Mode Select

This item allows users to select Infrared transmission mode.

Normal	Disable Infrared function
IrDA	Select IrDA mode transmission
ASKIR	Select ASKIR mode transmission

As Infrared transmission function shares onboard serial port 2, COM2 needs to be enabled.

RxD, TxD Active

This item is to configure Infrared transmission rate. Four options are available :

Hi, Hi	High rate for receiving / High rate for transmitting
Hi, Lo	High rate for receiving / Low rate for transmitting
Lo, Hi	Low rate for receiving / High rate for transmitting
Lo, Lo	Low rate for receiving / Low rate for transmitting

Onboard Parallel Port

This item allows you to configure I/O address of the onboard parallel port.

The choices : Disabled, 378/IRQ7, 278/IRQ5, 3BC/IRQ7

Parallel Port Mode

There are four different modes for the onboard parallel port :

SPP	Switch to SPP mode
EPP	Switch to EPP mode
ECP	Switch to ECP mode
ECP + EPP	Switch to ECP + EPP mode

EPP Mode Select

Select different version of EPP mode.

The choices : EPP1.7/EPP1.9

ECP Mode Use DMA

Select a proper DMA channel for ECP mode.

The choices : 3/1

PWRON After PWR-Fail

This item allows user to configure the power status of using ATX power supply after a serious power loss occurs.

On	System automatically restores power back
Off	System stays at power –off
Former-Sts	System restores back to previous status (On or Off)

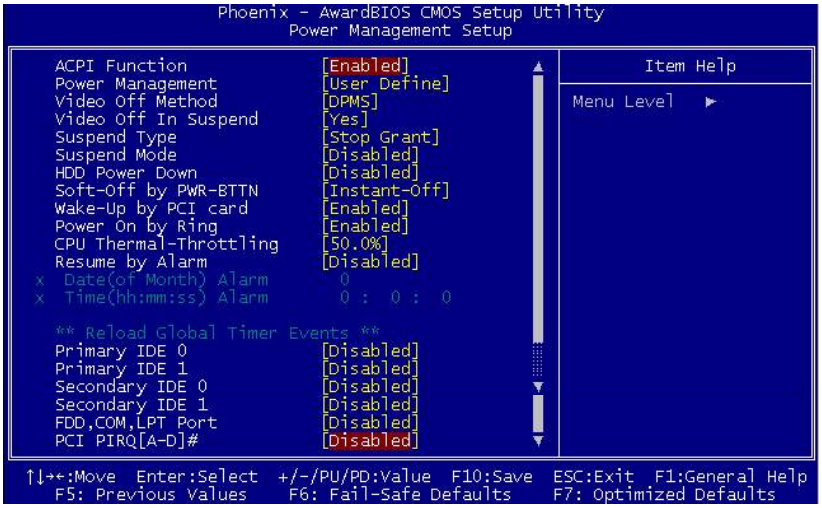
Watch Dog Timer Select

This item allows you to enable/disable WTD function.

The choices : Enabled/Disabled

4.11 Power Management Setup

The Power Management Setup allows you to configure you system to most effectively save energy while operating in a manner consistent with your own style of computer use.


Phoenix - AwardBIOS CMOS Setup Utility
Power Management Setup
ACPI Function [Enabled]
Power Management [User Define]
Video Off Method [DPMS]
Video Off In Suspend [Yes]
Suspend Type [Stop Grant]
Suspend Mode [Disabled]
HDD Power Down [Disabled]
Soft-Off by PWR-BTTN [Instant-Off]
Wake-Up by PCI card [Enabled]
Power On by Ring [Enabled]
CPU Thermal-Throttling [50.0%]
Resume by Alarm [Disabled]
x Date(of Month) Alarm 0
x Time(hh:mm:ss) Alarm 0 : 0 : 0
** Reload Global Timer Events **
Primary IDE 0 [Disabled]
Primary IDE 1 [Disabled]
Secondary IDE 0 [Disabled]
Secondary IDE 1 [Disabled]
FDD,COM,LPT Port [Disabled]
PCI PIRQ[A-D]# [Disabled]
Item Help
Menu Level ►
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

ACPI Function

This item allows you to enable/disable the Advanced Configuration and Power Management (ACPI).

The choices : Enabled/Disabled.

Power Management

This category allows you to select the type (or degree) of power saving and is directly related to "HDD Power Down", "Suspend Mode".

There are three selections for Power Management, three of which have fixed mode settings.

Min. Power Saving	Minimum power management. Suspend Mode = 1 hr., and HDD Power Down = 15 min.
Max. Power Saving	Maximum power management. Suspend Mode = 1 min., and HDD Power Down = 1 min.
User Defined	Allows you to set each mode individually. When not disabled, Suspend Mode ranges from 1 min. to 1 hr. and HDD Power Down ranges from 1 min. to 15 min.

Video Off Method

This determines the manner in which the monitor is blanked.

V/H SYNC+Blank	This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.
Blank Screen	This option only writes blanks to the video buffer.
DPMS	Initial display power management signaling.

Video Off In Suspend

This allows user to enable/disable video off in Suspend Mode.

The choices : Yes/No

Suspend Type

Two options are available : Stop Grant and Power On Suspend.

Suspend Mode

When enabled and after the set time of system inactivity, all devices except the CPU will be shut off.

HDD Power Down

When enabled and after the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active.

Soft-Off by PWR-BTTN

This item allows users to set the time to remove the power after the power button is pressed.

The choices : Instant-Off/Delay 4 Sec.

Resume On Ring

When select "Enabled", a system that is at soft-off mode will be alert to Wake-On-Lan or Wake-On-Modem signal.

The choices : Enabled/Disabled

CPU Thermal-Throttling

This item allows you to configure the CPU working duty cycle during suspend mode.

The choices : 12.5%, 25.0%, 37.5%, 50.0%, 62.5%, 75.0%, 87.5%

Resume by Alarm

This item allows users to enable/disable the resume by alarm function. When "Enabled" is selected, system using ATX power supply could be powered on if a customized time and day is approached.

Date(of Month) Alarm

When "Resume by Alarm" is enabled, this item could allow users to configure the date parameter of the timing dateline on which to power on the systm.

The choices : 0 ~ 31

Time(hh:mm:ss) Alarm

When "Resume by Alarm" is enabled, this item could allow users to configure the time parameter of the timing dateline on which to power on the systm.

The choices : hh (0~23), mm (0~59), ss (0 ~59)

Primary/Secondary IDE 0/1

This item is to configure IDE devices being monitored by system so as to keep system out of suspend mode if the associated device is busy.

The choices : Enabled/Disabled

FDD, COM, LPT Port

This item is to configure floppy device, COM ports, and parallel port being monitored by system so as to keep system out of suspend mode if the associated device is busy.

The choices : Enabled/Disabled

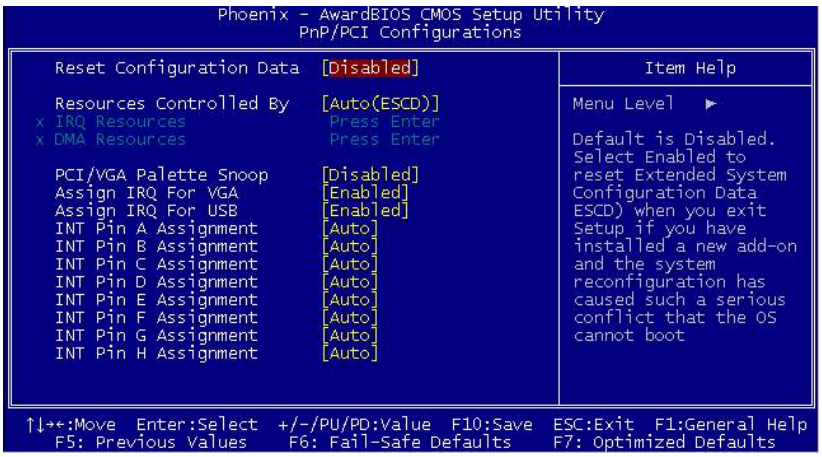
PCI PIRQ[A-D]#

This item is to enable/disable the IRQ setting over the PCI slots.
The choices : Enabled/Disabled

4.12 PnP/PCI Configuration Setup

This section describes configuring the PCI bus system. PCI, or **P**ersonal **C**omputer **I**nterconnect, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components.

This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.


Phoenix - AwardBIOS CMOS Setup Utility
PnP/PCI Configurations
Reset Configuration Data [Disabled]
Resources Controlled By [Auto(ESCD)]
x IRQ Resources Press Enter
x DMA Resources Press Enter
PCI/VGA Palette Snoop [Disabled]
Assign IRQ For VGA [Enabled]
Assign IRQ For USB [Enabled]
INT Pin A Assignment [Auto]
INT Pin B Assignment [Auto]
INT Pin C Assignment [Auto]
INT Pin D Assignment [Auto]
INT Pin E Assignment [Auto]
INT Pin F Assignment [Auto]
INT Pin G Assignment [Auto]
INT Pin H Assignment [Auto]
Item Help
Menu Level ►
Default is Disabled. Select Enabled to reset Extended System Configuration Data ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the OS cannot boot
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

Reset Configuration Data

Normally, you leave this field Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on card and the system reconfiguration has caused such a serious conflict that the operating system can not boot.

The choices: Enabled, Disabled .

Resource controlled by

The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as Windows®95. If you set this field to "manual" choose specific resources by going into each of the sub menu that follows this field (a sub menu is preceded by a "➢").

The choices: Auto (ESCD), Manual.

IRQ Resources

When resources are controlled manually, assign each system interrupt a type, depending on the type of device using the interrupt. It allows you to determine the IRQ assigned to the ISA bus and is not available to any PCI slot. Legacy ISA for devices compliant with the original PC AT bus specification, PCI/ISA PnP for devices compliant with the Plug and Play standard whether designed for PCI or ISA bus architecture.

The choices: "Legacy ISA" and "PCI/ISA PnP"

DMA Resources

When resources are controlled manually, assign each system DMA channel a type, depending on the type of device using the DM channel. Legacy ISA for devices compliant with the original PC AT bus specification, PCI/ISA PnP for devices compliant with the Plug and Play standard whether designed for PCI or ISA bus architecture.

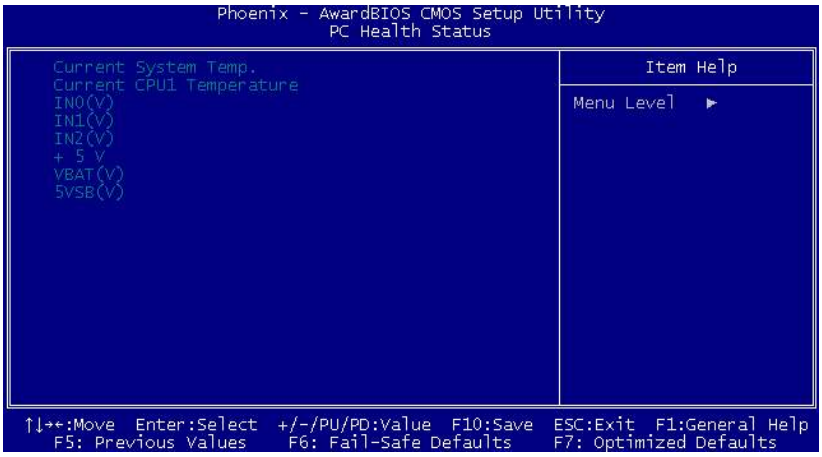
The choices: "Legacy ISA" and "PCI/ISA PnP"

PCI/VGA Palette Snoop

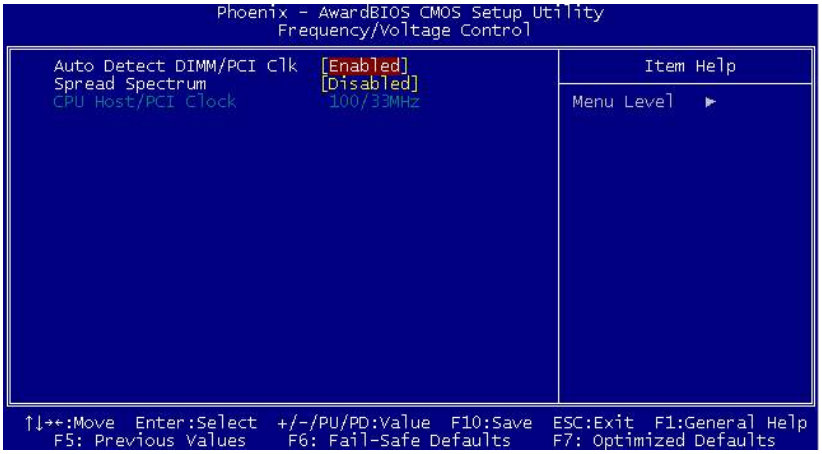
Leave this field at Disabled.

The choices : Enabled/Disabled.

4.13 PC Health Status



4.14 Frequency/Voltage Control


Phoenix - AwardBIOS CMOS Setup Utility
Frequency/Voltage Control
Auto Detect DIMM/PCI Clk [Enabled]
Spread Spectrum [Disabled]
CPU Host/PCI Clock 100/33MHz
Item Help
Menu Level ▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

Auto Detect DIMM CLK

This item allows you to enable/disable auto detect DIMM Clock

The choices : Enabled, Disabled

Spread Spectrum

This item allows you to enable/disable the spread spectrum modulate

The choices : Enabled, Disabled

4.15 Default Menu

Selecting "Defaults" from the main menu shows you two options which are described below

Load Fail-Safe Defaults
When you press <Enter> on this item you get a confirmation dialog box with a message similar to:

Load Fail-Safe Defaults (Y/N) ? N

Pressing 'Y' loads the BIOS default values for the most stable, minimal-performance system operations.

Load Optimized Defaults
When you press <Enter> on this item you get a confirmation dialog box with a message similar to:

Load Optimized Defaults (Y/N) ? N

Pressing 'Y' loads the default values that are factory settings for optimal performance system operations.

4.16 Supervisor/User Password Setting

You can set either supervisor or user password, or both of then. The differences between are:

supervisor password : can enter and change the options of the setup menus.

user password : just can only enter but do not have the right to change the options of the setup menus. When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

ENTER PASSWORD

Type the password, up to eight characters in length, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To disable a password, just press <Enter> when you are prompted to enter the password. A message will confirm the password will be disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

PASSWORD DISABLED

When a password has been enabled, you will be prompted to enter it every time you try to enter Setup. This prevents an unauthorized person from changing any part of your system configuration.

Additionally, when a password is enabled, you can also require the BIOS to request a password every time your system is rebooted. This would prevent unauthorized use of your computer.

You determine when the password is required within the BIOS Features Setup Menu and its Security option (see Section 3). If the Security option is set to “System”, the password will be required both at boot and at entry to Setup. If set to “Setup”, prompting only occurs when trying to enter Setup.

4.17 Exiting Selecting

Save & Exit Setup

Pressing <Enter> on this item asks for confirmation:

Save to CMOS and EXIT (Y/N)? Y

Pressing "Y" stores the selections made in the menus in CMOS – a special section of memory that stays on after you turn your system off. The next time you boot your computer, the BIOS configures your system according to the Setup selections stored in CMOS. After saving the values the system is restarted again.

Exit Without Saving

Pressing <Enter> on this item asks for confirmation:

Quit without saving (Y/N)? Y

This allows you to exit Setup without storing in CMOS any change. The previous selections remain in effect. This exits the Setup utility and restarts your computer.

4.18 POST Messages

During the Power On Self-Test (POST), if the BIOS detects an error requiring you to do something to fix, it will either sound a beep code or display a message. If a message is displayed, it will be accompanied by:

PRESS F1 TO CONTINUE, CTRL-ALT-ESC OR DEL TO ENTER SETUP

POST Beep

Currently there are two kinds of beep codes in BIOS. This code indicates that a video error has occurred and the BIOS cannot initialize the video screen to display any additional information. This beep code consists of a single long beep followed by two short beeps. The other code indicates that your DRAM error has occurred. This beep code consists of a single long beep repeatedly.

Error Messages

One or more of the following messages may be displayed if the BIOS detects an error during the POST. This list includes messages for both the ISA and the EISA BIOS.

CMOS BATTERY HAS FAILED

CMOS battery is no longer functional. It should be replaced.

CMOS CHECKSUM ERROR

Checksum of CMOS is incorrect. This can indicate that CMOS has become corrupt. This error may have been caused by a weak battery. Check the battery and replace if necessary.

DISK BOOT FAILURE, INSERT SYSTEM DISK AND PRESS ENTER

No boot device was found. This could mean that either a boot drive was not detected or the drive does not contain proper system boot files. Insert a system disk into Drive A: and press <Enter>. If you assumed the system would boot from the hard drive, make sure the controller is inserted correctly and all cables are properly attached. Also be sure the disk is formatted as a boot device. Then reboot the system.

DISKETTE DRIVES OR TYPES MISMATCH ERROR - RUN SETUP

Type of diskette drive installed in the system is different from the CMOS definition. Run Setup to reconfigure the drive type correctly.

DISPLAY SWITCH IS SET INCORRECTLY

Display switch on the motherboard can be set to either monochrome or color. This indicates the switch is set to a different setting than indicated in Setup. Determine which setting is correct, and then either turn off the system and change the jumper, or enter Setup and change the VIDEO selection.

DISPLAY TYPE HAS CHANGED SINCE LAST BOOT

Since last powering off the system, the display adapter has been changed. You must configure the system for the new display type.

EISA Configuration Checksum Error PLEASE RUN EISA CONFIGURATION UTILITY

The EISA non-volatile RAM checksum is incorrect or cannot correctly read the EISA slot. This can indicate either the EISA non-volatile memory has become corrupt or the slot has been configured incorrectly. Also be sure the card is installed firmly in the slot.

EISA Configuration Is Not Complete
PLEASE RUN EISA CONFIGURATION UTILITY

The slot configuration information stored in the EISA non-volatile memory is incomplete.

NOTE: When either of these errors appear, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

ERROR ENCOUNTERED INITIALIZING HARD DRIVE

Hard drive cannot be initialized. Be sure the adapter is installed correctly and all cables are correctly and firmly attached. Also be sure the correct hard drive type is selected in Setup.

ERROR INITIALIZING HARD DISK CONTROLLER

Cannot initialize controller. Make sure the cord is correctly and firmly installed in the bus. Be sure the correct hard drive type is selected in Setup. Also check to see if any jumper needs to be set correctly on the hard drive.

FLOPPY DISK CNTRLR ERROR OR NO CNTRLR PRESENT

Cannot find or initialize the floppy drive controller. make sure the controller is installed correctly and firmly. If there are no floppy drives installed, be sure the Diskette Drive selection in Setup is set to NONE.

Invalid EISA Configuration

PLEASE RUN EISA CONFIGURATION UTILITY

The non-volatile memory containing EISA configuration information was programmed incorrectly or has become corrupt. Re-run EISA configuration utility to correctly program the memory.

NOTE: When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

KEYBOARD ERROR OR NO KEYBOARD PRESENT

Cannot initialize the keyboard. Make sure the keyboard is attached correctly and no keys are being pressed during the boot.

If you are purposely configuring the system without a keyboard, set the error halt condition in Setup to HALT ON ALL, BUT KEYBOARD. This will cause the BIOS to ignore the missing keyboard and continue the boot.

Memory Address Error at ...

Indicates a memory address error at a specific location. You can use this location along with the memory map for your system to find and replace the bad memory chips.

Memory parity Error at ...

Indicates a memory parity error at a specific location. You can use this location along with the memory map for your system to find and replace the bad memory chips.

MEMORY SIZE HAS CHANGED SINCE LAST BOOT

Memory has been added or removed since the last boot. In EISA mode use Configuration Utility to reconfigure the memory configuration. In ISA mode enter Setup and enter the new memory size in the memory fields.

Memory Verify Error at ...

Indicates an error verifying a value already written to memory. Use the location along with your system's memory map to locate the bad chip.

OFFENDING ADDRESS NOT FOUND

This message is used in conjunction with the I/O CHANNEL CHECK and RAM PARITY ERROR messages when the segment that has caused the problem cannot be isolated.

OFFENDING SEGMENT:

This message is used in conjunction with the I/O CHANNEL CHECK and RAM PARITY ERROR messages when the segment that has caused the problem has been isolated.

PRESS A KEY TO REBOOT

This will be displayed at the bottom screen when an error occurs that requires you to reboot. Press any key and the system will reboot.

PRESS F1 TO DISABLE NMI, F2 TO REBOOT

When BIOS detects a Non-maskable Interrupt condition during boot, this will allow you to disable the NMI and continue to boot, or you can reboot the system with the NMI enabled.

RAM PARITY ERROR - CHECKING FOR SEGMENT ...

Indicates a parity error in Random Access Memory.
Should Be Empty But EISA Board Found
PLEASE RUN EISA CONFIGURATION UTILITY

A valid board ID was found in a slot that was configured as having no board ID.

NOTE: When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

Should Have EISA Board But Not Found

PLEASE RUN EISA CONFIGURATION UTILITY

The board installed is not responding to the ID request, or no board ID has been found in the indicated slot.

NOTE: When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

Slot Not Empty

Indicates that a slot designated as empty by the EISA Configuration Utility actually contains a board.

NOTE: When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

SYSTEM HALTED, (CTRL-ALT-DEL) TO REBOOT ...

Indicates the present boot attempt has been aborted and the system must be rebooted. Press and hold down the CTRL and ALT keys and press DEL.

Wrong Board In Slot
PLEASE RUN EISA CONFIGURATION UTILITY

The board ID does not match the ID stored in the EISA non-volatile memory.

NOTE: When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

FLOPPY DISK(S) fail (80) → Unable to reset floppy subsystem.

FLOPPY DISK(S) fail (40) → Floppy Type mismatch.

Hard Disk(s) fail (80) **→ HDD reset failed**

Hard Disk(s) fail (40) **→ HDD controller diagnostics failed.**

Hard Disk(s) fail (20) **→ HDD initialization error.**

Hard Disk(s) fail (10) **→ Unable to recalibrate fixed disk.**

Hard Disk(s) fail (08) **→ Sector Verify failed.**

Keyboard is locked out - Unlock the key.

Keyboard error or no keyboard present.

Cannot initialize the keyboard. Make sure the keyboard is attached correctly and no keys are being pressed during the boot.

BIOS ROM checksum error - System halted.

The checksum of ROM address F0000H-FFFFFH is bad.

Memory test fail.

BIOS reports the memory test fail if the onboard memory is tested error.

4.19 BIOS POST Check Point List

AWARDBIOS provides all IBM standard Power On Self Test (POST) routines as well as enhanced AWARDBIOS POST routines. The POST routines support CPU internal diagnostics. The POST checkpoint codes are accessible via the Manufacturing Test Port (I/O port 80h).

Whenever a recoverable error occurs during the POST, the system BIOS will display an error message describing the message and explaining the problem in detail so that the problem can be corrected.

During the POST, the BIOS signals a checkpoint by issuing one code to I/O address 80H. This code can be used to establish how far the BIOS has executed through the power-on sequence and what test is currently being performed. This is done to help troubleshoot faulty system board.

If the BIOS detects a terminal error condition, it will halt the POST process and attempt to display the checkpoint code written to port 80H. If the system hangs before the BIOS detects the terminal error, the value at port 80H will be the last test performed. In this case, the terminal error cannot be displayed on the screen. The following POST checkpoint codes are valid for all AWARDBIOS products with a core BIOS date of 07/15/95 version 6.27 (Enhanced).

Code	Description
CFh	Test CMOS R/W functionality.
C0h	Early chipset initialization: -Disable shadow RAM -Disable L2 cache (socket 7 or below) -Program basic chipset registers
C1h	Detect memory -Auto-detection of DRAM size, type and ECC. -Auto-detection of L2 cache (socket 7 or below)
C3h	Expand compressed BIOS code to DRAM
C5h	Call chipset hook to copy BIOS back to E000 & F000 shadow RAM.
0h1	Expand the Xgroup codes locating in physical address 1000:0
02h	Reserved
03h	Initial Superio_Early_Init switch.
04h	Reserved
05h	1. Blank out screen 2. Clear CMOS error flag
06h	Reserved

07h	1. Clear 8042 interface 2. Initialize 8042 self-test
08h	1. Test special keyboard controller for Winbond 977 series Super I/O chips. 2. Enable keyboard interface.
09h	Reserved
0Ah	Disable PS/2 mouse interface (optional). Auto detect ports for keyboard & mouse followed by a port & interface swap (optional). Reset keyboard for Winbond 977 series Super I/O chips.
0Bh	Reserved
0Ch	Reserved
0Dh	Reserved
0Eh	Test F000h segment shadow to see whether it is R/W-able or not. If test fails, keep beeping the speaker.
0Fh	Reserved
10h	Auto detect flash type to load appropriate flash R/W codes into the run time area in F000 for ESCD & DMI support.
11h	Reserved
12h	Use walking 1's algorithm to check out interface in CMOS circuitry. Also set real-time clock power status, and then check for override.
13h	Reserved
14h	Program chipset default values into chipset. Chipset default values are MODBINable by OEM customers.
15h	Reeserved
16h	Initial Early_Init_Onboard_Generator switch.
17h	Reserved
18h	Detect CPU information including brand, SMI type (Cyrix or Intel) and CPU level (586 or 686).
19h	Reserved
1Ah	Reserved
1Bh	Initial interrupts vector table. If no special specified, all H/W interrupts are directed to SPURIOUS_INT_HDLR & S/W interrupts to SPURIOUS_soft_HDLR.
1Ch	Reserved
1Dh	Initial EARLY_PM_INIT switch.
1Eh	Reserved
1Fh	Load keyboard matrix (notebook platform)
20h	Reserved
21h	HPM initialization (notebook platform)
22h	Reserved

23h	1. Check validity of RTC value: e.g. a value of 5Ah is an invalid value for RTC minute. 2. Load CMOS settings into BIOS stack. If CMOS checksum fails, use default value instead. 3. Prepare BIOS resource map for PCI & PnP use. If ESCD is valid, take into consideration of the ESCD's legacy information. 4. Onboard clock generator initialization. Disable respective clock resource to empty PCI & DIMM slots. 5. Early PCI initialization: -Enumerate PCI bus number -Assign memory & I/O resource -Search for a valid VGA device & VGA BIOS, and put it into C000:0.
24h	Reserved
25h	Reserved
26h	Reserved
27h	Initialize INT 09 buffer
28h	Reserved
29h	Program CPU internal MTRR (P6 & PII) for 0-640K memory address. Initialize the APIC for Pentium class CPU. Program early chipset according to CMOS setup. Example: onboard IDE controller. Measure CPU speed. Invoke video BIOS.
2Ah	Reserved
2Bh	Reserved
2Ch	Reserved
2Dh	Initialize multi-language. Put information on screen display, including Award title, CPU type, CPU speed ….
2Eh	Reserved
2Fh	Reserved
30h	Reserved
31h	Reserved
32h	Reserved
33h	Reset keyboard except Winbond 977 series Super I/O chips.
34h	Reserved
35h	Reserved
36h	Reserved
37h	Reserved
38h	Reserved
39h	Reserved
3Ah	Reserved
3Bh	Reserved

3Ch	Test 8254
3Dh	Reserved
3Eh	Test 8259 interrupt mask bits for channel 1.
3Fh	Reserved
40h	Test 8259 interrupt mask bits for channel 2.
41h	Reserved
42h	Reserved
43h	Test 8259 functionality.
44h	Reserved
45h	Reserved
46h	Reserved
47h	Initialize EISA slot
48h	Reserved
49h	1. Calculate total memory by testing the last double word of each 64K page. 2. Program writes allocation for AMD K5 CPU.
4Ah	Reserved
4Bh	Reserved
4Ch	Reserved
4Dh	Reserved
4Eh	1. Program MTRR of M1 CPU 2. Initialize L2 cache for P6 class CPU & program CPU with proper cacheable range. 3. Initialize the APIC for P6 class CPU. 4. On MP platform, adjust the cacheable range to smaller one in case the cacheable ranges between each CPU are not identical.
4Fh	Reserved
50h	Initialize USB
51h	Reserved
52h	Test all memory (clear all extended memory to 0)
53h	Reserved
54h	Reserved
55h	Display number of processors (multi-processor platform)
56h	Reserved
57h	1. Display PnP logo 2. Early ISA PnP initialization -Assign CSN to every ISA PnP device.
58h	Reserved
59h	Initialize the combined Trend Anti-Virus code.
5Ah	Reserved

5Bh	(Optional Feature) Show message for entering AWDFLASH.EXE from FDD (optional)
5Ch	Reserved
5Dh	1. Initialize Init_Onboard_Super_IO switch. 2. Initialize Init_Onbaord_AUDIO switch.
5Eh	Reserved
5Fh	Reserved
60h	Okay to enter Setup utility; i.e. not until this POST stage can users enter the CMOS setup utility.
61h	Reserved
62h	Reserved
63h	Reserved
64h	Reserved
65h	Initialize PS/2 Mouse
66h	Reserved
67h	Prepare memory size information for function call: INT 15h ax=E820h
68h	Reserved
69h	Turn on L2 cache
6Ah	Reserved
6Bh	Program chipset registers according to items described in Setup & Auto-configuration table.
6Ch	Reserved
6Dh	Assign resources to all ISA PnP devices. Auto assign ports to onboard COM ports if the corresponding item in Setup is set to "AUTO".
6Eh	Reserved
6Fh	1. Initialize floppy controller 2. Set up floppy related fields in 40:hardware.
70h	Reserved
71h	Reserved
72h	Reserved
73h	(Optional Feature) Enter AWDFLASH.EXE if : -AWDFLASH is found in floppy drive. -ALT+F2 is pressed
74h	Reserved
75h	Detect & install all IDE devices: HDD, LS120, ZIP, CDROM…..
76h	Reserved
77h	Detect serial ports & parallel ports.
78h	Reserved
79h	Reserved

7Ah	Detect & install co-processor
7Bh	Reserved
7Ch	Reserved
7Dh	Reserved
7Eh	Reserved
7Fh	1. Switch back to text mode if full screen logo is supported. -If errors occur, report errors & wait for keys -If no errors occur or F1 key is pressed to continue: ◆Clear EPA or customization logo.
80h	Reserved
81h	Reserved
82h	1. Call chipset power management hook. 2. Recover the text fond used by EPA logo (not for full screen logo) 3. If password is set, ask for password.
83h	Save all data in stack back to CMOS
84h	Initialize ISA PnP boot devices
85h	1. USB final Initialization 2. NET PC: Build SYSID structure 3. Switch screen back to text mode 4. Set up ACPI table at top of memory. 5. Invoke ISA adapter ROMs 6. Assign IRQs to PCI devices 7. Initialize APM 8. Clear noise of IRQs.
86h	Reserved
87h	Reserved
88h	Reserved
89h	Reserved
90h	Reserved
91h	Reserved
92h	Reserved
93h	Read HDD boot sector information for Trend Anti-Virus code
94h	1. Enable L2 cache 2. Program boot up speed 3. Chipset final initialization. 4. Power management final initialization 5. Clear screen & display summary table 6. Program K6 write allocation 7. Program P6 class write combining
95h	1. Program daylight saving 2. Update keyboard LED & typematic rate

96h	1. Build MP table 2. Build & update ESCD 3. Set CMOS century to 20h or 19h 4. Load CMOS time into DOS timer tick 5. Build MSIRQ routing table.
FFh	Boot attempt (INT 19h)

4.20 Flash BIOS Utility

Utilize AWARD Flash BIOS programming utility to update on-board BIOS for the future new BIOS version. Please contact your technical window to get this utility if necessary.

NOTE: Remark or delete any installed Memory Management Utility (such as HIMEM.SYS, EMM386.EXE, QEMM.EXE, …, etc.) in the CONFIG.SYS files before running Flash programming utility.

CHAPTER 5
Troubleshooting

This chapter provides you a few useful tips to quickly get your PEB-6630/6631VLA running with no failure. As basic hardware installation has been addressed in Chapter 3, this chapter will basically focus on system integration issues, in terms of backplane setup, BIOS setting, and OS diagnostics.

5.1 Backplane Setup

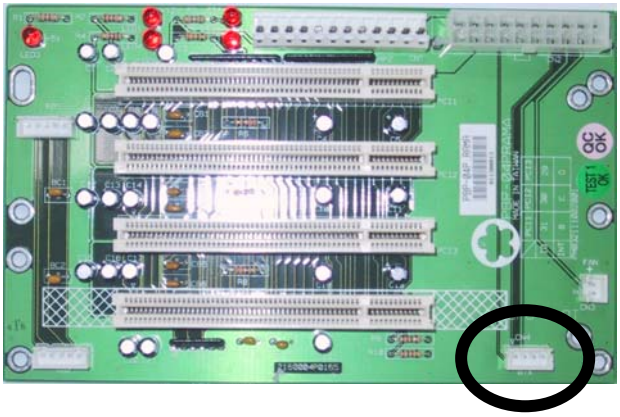
Backplane

PEB-6630/6631VLA is a half-sized SBC with only PCI golden finger, and therefore is only able to run on PCI-only Backplane. You cannot apply PEB-6630/6631VLA on any PCI slot of your PCI-slot only backplane. Backplane shall indicate which slot is good for your PEB-6630/6631VLA (CPU card).

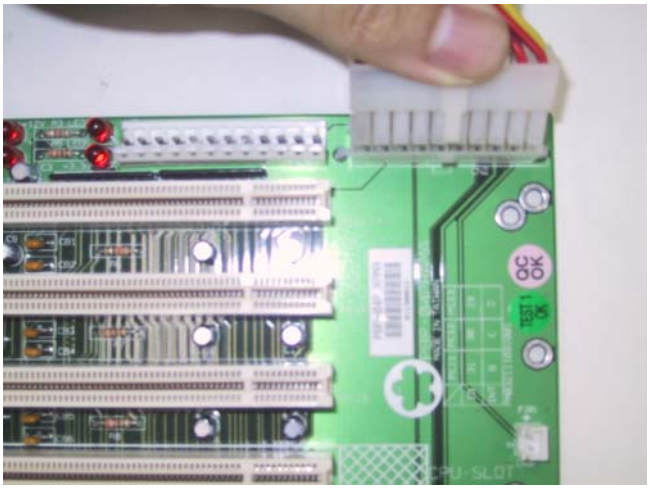
ATX power

PEB-6630/6631VLA is designed to also support ATX mode. Please refer to the following instruction to apply ATX power on your PEB-6630/6631VLA and backplane.

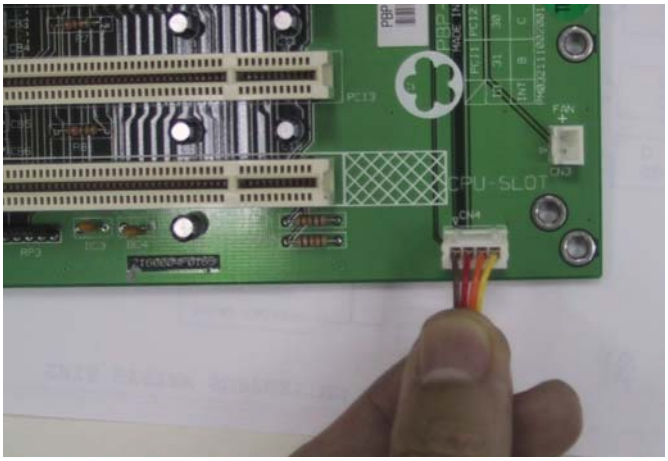
Step1: Remove the jumper on pin3 and pin4 of ATX P/S CONTROL CONNECTOR (4-pin) connector (see the Figure below).



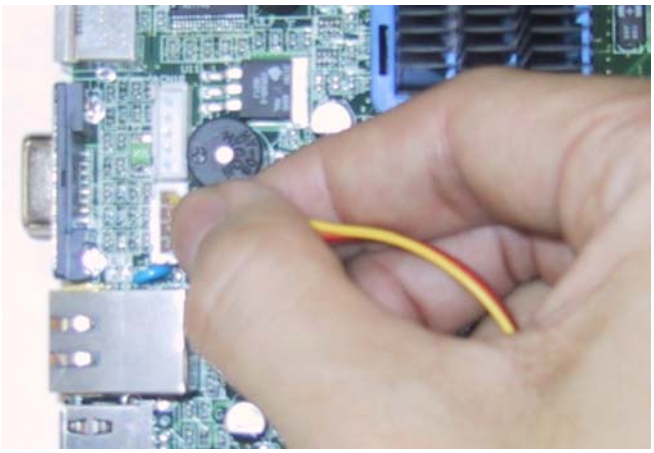
Step2: Connect 20-pin power cable of the ATX POWER with ATX POWER CONNECTOR (20-pin) on the backplane.



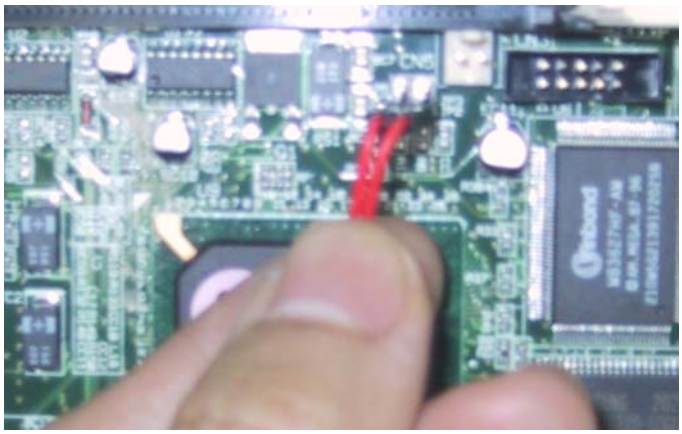
Step3: Use a 4-pin power cable to connect the ATX P/S CONTROL CONNECTOR (4-pin) connector on the backplane.



Step4: Please find the CN14 4-pin ATX Power Control Connector on the near bracket part of PEB-6630/6631VLA in white color. You will also see a mark with "CN14" on the lower-right side of CN14 header. Connect the 4-pin ATX power control cable with this CN14 header.



Step5: Connect TOGGLE SWITCH with J24 connector on PEB-6630/6631VLA.



Q: In addition to the above description, is there anything to do to finish up an ATX system ??
A: Yes. PEB-6630/6631VLA needs to be configured to support ATX function for the above cabling. Please move jumper JP1 to 3-5 short and 4-6 short (support ATX function).

Q: How can I build up an AT system using ATX power supply
A: Do not forget to move JP1 of PEB-6630/6631VLA back to 1-3 short and 2-4 short (support AT function).

If the ATX power supply has a switch, such as ORION-300ATX, do not remove the jumper of backplane connector in step 1, and use the power supply switch as the system power on switch.

In all cases, users may apply a 2-pin AT (on/off) switch over pin-3 and pin-4 of the backplane connector in step 1. However, power supply switch needs to be moved to "on", if there is one.

5.2 Onboard hardware installation

Q: How do I connect my keyboard and mouse ??

A: Users may always adopt PS/2 keyboard and mouse over the PS/2 interface (through Y-cable), CN8 on PEB-6630/6631VLA.

However, it is also fine to adopt a standard keyboard over the standard keyboard connector on backplane, if provided. In this way, users need to adopt a 5-pin keyboard connection cable to line-up, external keyboard interface, CN10 on PEB-6630/6631VLA with the 5-pin keyboard connector on backplane.

Q: OK. I have finished up hardware installation, but I got nothing when I power on the system. Why ??

A: There are thousands of different reasons to get this power on failure.

1. Check PEB-6630/6631VLA jumper JP1. For AT power supply or ATX power supply used for AT system, JP1 needs to be at 1-3 and 2-4. Otherwise, it needs to be at 3-5 and 4-6. Incorrect power setting will not allow you to power on the system.

2. Double check if every connector is attached with the correct cable.

3. If you have changed processor with different system clock, please move JP4 (CMOS clear Jumper) to 1-2, power on the system to clear CMOS (move on/off switch from off to on for AT mode, or toggle the switch for ATX mode), power off the system, move JP4 back to 2-3, and power on again.

Q: I connect two IDE devices over one IDE flat cable, but the system either does not start, or just hangs from time to time. Why ??

A: Make sure that you have configured the two IDE devices as a master and a slave, respectively.

Q: I am using an ATA-66 (or 100) hard drive, how can I know that ATA-66 function is started??

A: You need to use the 80-pin ATA-66 IDE flat cable to have this function ready. During POST, you can see ATA-66 (or 100) message while hard drive is being detected.

5.3 BIOS Setting

It is assumed that users have correctly adopted modules and connected all the device cables required before turning on AT power. CPU, CPU fan, CPU fan power cable, 168-pin SDRAM, keyboard, mouse, floppy drive, IDE hard disk, printer, VGA connector, device power cables, ATX accessories or P8/P9 power cable are good examples that deserve attention. With no assurance of properly and correctly accommodating these modules and devices, it is very possible to encounter system failures that result in malfunction of any device.

To make sure that you have a successful start with PEB-6630/6631VLA, it is recommended, when going with the boot-up sequence, to hit "DEL" key and enter the BIOS setup menu to tune up a stable BIOS configuration so that you can wake up your system far well.

Loading the default optimal setting

When prompted with the main setup menu, please scroll down to "**Load Optimal Defaults**", press "Enter" and "Y" to load in default optimal BIOS setup. This will force your BIOS setting back to the initial factory configuration. It is recommended to do this so that you can be sure that system is running with the BIOS setting that Portwell has highly endorsed. As a matter of fact, users can load in the default BIOS setting any time system appears to be unstable in boot up sequence.

Auto Detect Hard Disks

In the BIOS => Standard CMOS setup menu, pick up any one from Primary/Secondary Master/Slave IDE ports, and press "Enter". Setup the said IDE port and its access mode to "Auto". This will force system to automatically pick up the IDE devices that are being connected each time system is booted.

Improper disable operation

There are too many occasions where users disable, in BIOS setup, a certain device/feature in one application, but do not enable it before manipulating with another application where the disabled device is needed. Certainly, users fail to detect this device/feature and end up with system failure.

Please check in the BIOS setting that the devices or ports that you need are not disabled. These include the floppy drive, COM1/COM2 ports, parallel port, USB ports, external cache, on-board VGA and Ethernet.

It is also very common that users would like to disable a certain device/port to release IRQ resource. A few good examples are

disable COM1 serial port to release IRQ #4
disable COM2 serial port to release IRQ #3
disable parallel port to release IRQ #7
disable PS/2 mouse to release IRQ #12,
…, etc.

A quick review of the basic IRQ mapping is given below for your reference.

IRQ#	Description
IRQ #0	System Counter
IRQ #1	Keyboard
IRQ #2	Programmed Controller
IRQ #3	COM2
IRQ #4	COM1
IRQ #5	Nothing
IRQ #6	Floppy Disk Controller
IRQ #7	Printer Port (Parallel Port)
IRQ #8	CMOS Clock
IRQ #9	Nothing
IRQ #10	USB interface
IRQ #11	Nothing
IRQ #12	PS/2 mouse
IRQ #13	Data Processor
IRQ #14	Primary IDE Controller
IRQ #15	Secondary IDE Controller

It is then very easy to find out which IRQ resource is ready for additional peripherals. If IRQ resource is not enough, please disable some devices listed above to release more.

5.4 OS Diagnostics

What will be presented here is a brief guide to properly house-in the driver for any Microsoft Windows-95/98/NT device. For other operating systems, please refer to OS manual/guidebook.

Booting

Users may find quite a lot that Windows-95/98 hangs in loading sequence. Windows logo stays with no progress, or simply no display is given. Please restart your system and hit "F5" when loading the Windows system and enter "Safe mode". Users will always be allowed to enter "Safe mode" with success to remove devices that are not properly running or installed. Please proceed to do so and restart your Windows. Removed devices will be automatically detected again and drivers will be loaded in if drivers have been copied in the system database, or you will be asked to provide driver source for installation.

For Windows-NT 4.0 users, it is always not recommended to change your hardware configuration after your first installation. However, if such a change is needed, please note that sometimes Windows-NT 4.0 will stop loading and prompt you with a whole page of error messages. Please note that reinstallation of this NT hard disk is inevitable. You have to backup your data stored in this hard disk because it is almost impossible to switch back this system unless booting up with another hard disk. If this NT hard disk is installed with FAT16 disk format, please boot up your system with any Windows OS. You will then be able to see this NT hard disk and retrieve any data you have interest in. However, if this NT hard disk is installed with NTFS disk format, there is only NTFS that allows you to retrieve this NT hard disk again.

Display setup

By default, any Windows OS starts with 640 x 480 by 16 colors display. Please load in the display driver provided in PEB-6630/6631VLA product CDROM to maximize the VGA performance. If you are using a monitor that Windows cannot identify, you will also need to set, in the display setup menu, a system monitor to correctly retrieve display output. For Windows-NT 4.0 users, as PEB-6630/6631VLA provides Direct AGP on-board display feature, Service Pack 3.0 or above is required to activate this display feature.

Network setup

Windows-95/98 users.

Please apply a PCI network card over PCI slot, or simply use the on-board Fast Ethernet device.
Start Windows-95/98 and let Window-95/98 automatically detect your network adapter.
Provide the driver and complete installation.
Restart your windows system is required.
After you come back to windows, please go to Control Panel -> System -> Device Manager and see if your network adapter has been properly installed. A warning sign will be prompted if the network adaptor is not properly installed.
Please remove this network device from system setup menu and restart windows to re-detect your network adapter again.
After you are sure that hardware installation is completed, please go to Control Panel -> Network to set up your networking configuration. This includes DNS, IP, and Gateway. Appropriate protocols are required to carry your networking activities. Please refer to your system administrator for additional assistance.

Windows-NT 4.0 users.

1. Please install your network adapter manually in Control Panel -> Network -> Adapter. Drivers are required at this stage.
2. Proceed "Binding" after you load in the driver.
3. Change to Protocol label and load in the protocols that you have interest (generally, TCP/IP). Configuring IP, gateway and DNS is required for TCP/IP protocol.
4. Proceed again "Binding" after you complete the protocol loading.
5. Restart your system.
6. There is also situation that your installed network adapter is not working anymore for you, or old network driver stays in the system after you change your network card. Please remove then all the network adapters and protocols from network setup menu and redo the loading of driver and protocols again.
7. Network setup within Windows-NT 4.0 is not as easy as within Windows-95/98. Special familiarity and care are required to come out with a successful installation.

NOTE:
Please visit our technical web site at
http://www.portwell.com.tw
For additional technical information that is not covered in this manual.